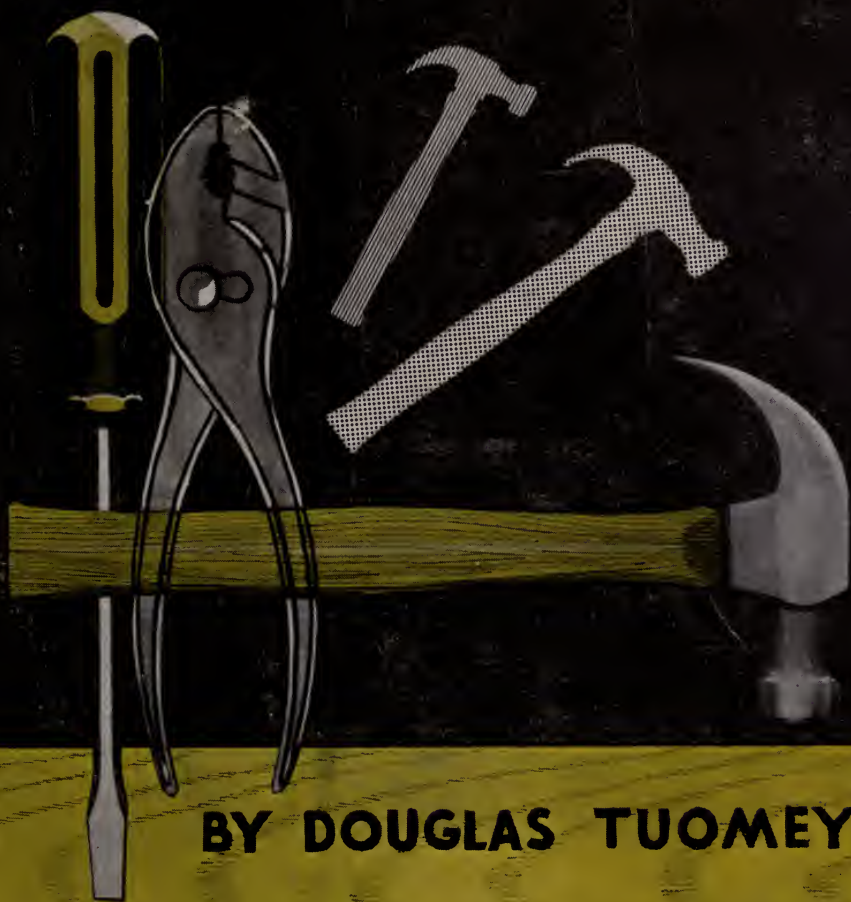


HOW TO TAKE CARE OF **YOUR HOME**



BY DOUGLAS TUOMEY

HOW TO TAKE CARE OF YOUR HOME

by DOUGLAS TUOMEY

For more than fifteen years, Mr. Tuomey has acted as a building construction consultant for many of the leading magazines. He is an acknowledged authority on home building and home repairs, and has contributed hundreds of outstanding articles on those subjects.

Among the magazines which regularly publish his contributions are *Woman's Home Companion*, *House & Garden*, *Good Housekeeping*, *Your Own Home* and *Parents Magazine*. He is the author of two newspaper columns which appear in more than thirty of the leading papers throughout the country, and the author of several books on home maintenance and repairs.

HOW TO TAKE CARE OF YOUR HOME is written by a man who not only can tell you how to do your own repair work, but who can actually take up the tools and do it himself. Before adopting writing as a profession, Mr. Tuomey spent over thirty years in the building business as a contractor, and is an expert in plumbing, heating, masonry, carpentry, roofing and allied trades.

In HOW TO TAKE CARE OF YOUR HOME you have the answers to most of the household repair problems which plague the homeowner, and eat into his pocket-book.

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HOW TO TAKE CARE OF

Your Home

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BY DOUGLAS TUOMEY

Illustrated by
Charles J. Spiess, Jr.



1947

HERALD PUBLISHING CO.

NEW YORK

The author extends his thanks to the following firms for their courtesy in permitting him use of the photographs in this volume: Congoleum-Nairn, Inc.; Plumbing and Heating Industries Bureau; General Electric Co.; Pittsburgh Plate Glass Co.

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HOW TO TAKE CARE OF

Your Home



Chapter 1

GENERAL HOUSEHOLD REPAIRS

THE AVERAGE homeowner approaches the subject of household repairs and maintenance with considerable skepticism. He is well aware of the fact that he knows nothing whatever about plumbing, heating systems, carpentry or any of the other branches of husbandry. He is in the class of the gentleman who once announced that he could keep his entire house in perfect order and excellent repair by using only one instrument—the telephone. There is plenty of humor in that, but little help in keeping the repair and maintenance bills down to a minimum. Nevertheless it is a fact that the average man can do a most excellent job in keeping his home in repair if he is willing to spend a few of his leisure hours in studying and learning the techniques and procedures which are used by the professional handyman or mechanic. You can take our word for it that there is absolutely nothing mysterious, complicated or beyond ordinary understanding, in anything that has to do with homebuilding, or with home maintenance. If the average citizen would only put his undivided attention to work on the subject, he would find that he could manage to do most of the small repair jobs around the house with very little trouble. When he

becomes proficient at repairing leaking faucets, replacing broken window panes and cleaning out gutters and downspouts, he will find that his ambition increases, and before long he will be painting his own house from top to bot-

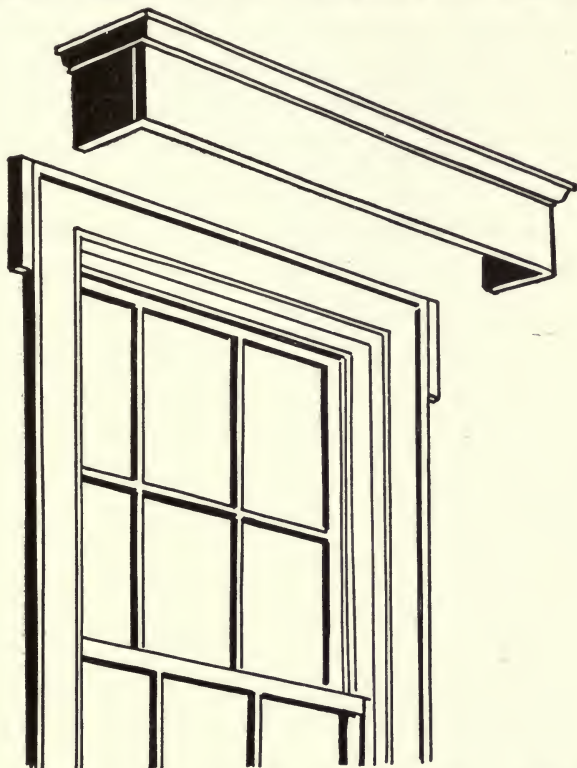


The technique of good painting should be first practiced indoors where ideal conditions prevail, and where outside influences such as weather, wind and dust are not a factor.

tom. Not all at once of course, probably the doors and frames during one week-end and the window frames and sash the following week. In a month or so he will be doing the walls in sections. A job that would cost him \$400

under normal circumstances, will have been accomplished for the cost of the paint alone, probably some \$60 worth.

A few weeks ago, we were considerably amused by an incident which bears out the point we want to make.



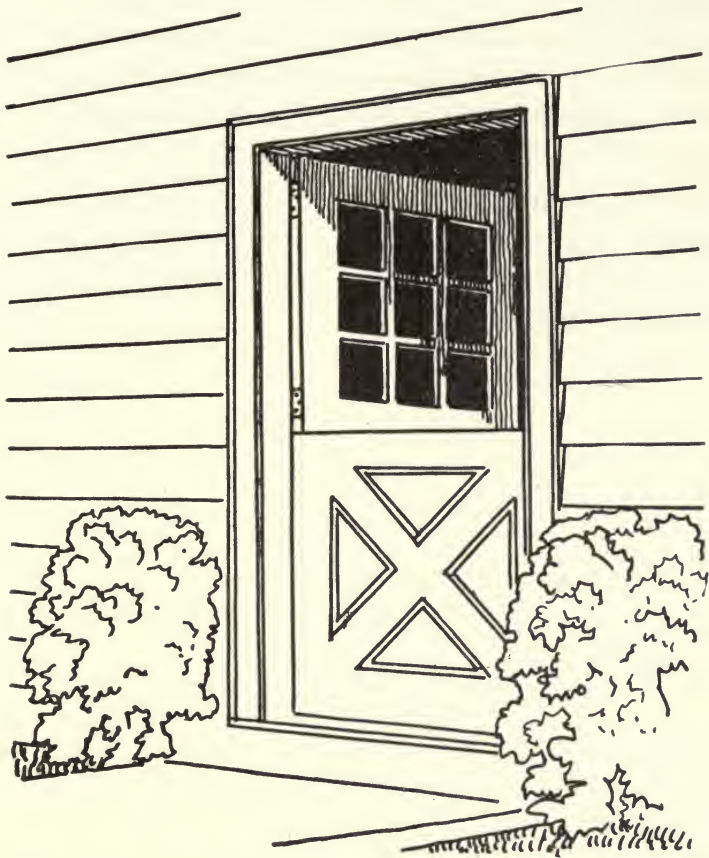
Plain carpentry, such as beads, moldings, window cornices, and shelves, are child's-play to the amateur who will take his time and study the problem he wants to finish nicely.

One of the executives of a large textile company was telling us that he had just received an estimate from a carpenter for making about a dozen wood cornices for the tops of his living room and dining room windows. The

estimate was \$129 for making and installing them without painting. We suggested that he do the job himself; and after some conversation about it he decided to try it. To make a long story short, this man bought about \$10 worth of one by eight finishing strip and nice molding; took his time making careful measurements, and in about a week's time, working in the evenings, he produced as nice a job as anyone could wish for. It is true that the first cornice he made was pretty bad, so he took it apart. The second try produced a better one, but by that time he was really interested in what he was doing, so he took that one apart too. The third attempt was good, and with that as a pattern he went ahead. Here is a typical case of where a man without any knowledge whatever of carpentry or cabinet-making, managed to do a nice piece of work in his house, and save himself over \$100 in the bargain. The last we heard of him, he was about to take down the front door and saw it in half, so as to convert it into a dutch door. Of course that is the most simple of jobs, as he need only install two additional hinges, one above and one below the cut, and nail a narrow drip-molding across the door above the cut. A new dutch door would cost about \$50, whereas altering the present door is a matter of \$2 for hinges, ten cents for the molding, and two hours of the homeowner's time.

There is hardly a home in the country that does not have constant need of repair or adjustments of some kind or other. Windows suddenly refuse to open or to shut, doors will not close tightly or will refuse to stay closed.

Locks will not work or sinks will not drain off. Pipes will start to drip and heating plants will run continuously



Many of the so-called large improvements which the owner may want to make around the house, will turn out to be a very simple matter after he has thought out the procedure. The average solid or half-glass door is a prospective "Dutch."

without heating the house properly. There is a simple answer for each and every difficulty, and we repeat that the

homeowner can remedy ninety percent of the trouble himself if he wants to put his mind to it and learn to use his hands. When you call someone in to ease up a window or rehang a door, you are going to pay four or five dollars for his services. You can do it yourself, for nothing, if you simply take the trouble to learn how. When the heating plant does not function properly the chances are that it needs to be cleaned. It might well cost you \$10 to have it done; but the man who will do it is not going to use any method which you yourself are not perfectly capable of using.

Chapter 2

HOW TO MAKE ROOF REPAIRS

ROOF REPAIRS are the most difficult of all household jobs for either the owner himself or for a contractor. This might be attributed to the fact that as soon as a man is off the ground he is out of his natural element. Be that as it may, the fact remains that roof repairs have always been, and still are, very expensive. It is one thing to walk into a house and do some painting or work on a furnace, but it is another matter when your job is forty feet above the ground, and you have to consider your safety as well as the work at hand. For this reason the average person should not attempt roof work or repairs unless he is in good shape, sure of himself, and absolutely certain that he knows how to tackle the work with safety.

There are all kinds of roofs. If your own happens to be quite flat, and your house is a one-story building, so that you can reach the roof by using an ordinary ladder, there is little danger in venturing out on it, but if you have to crawl through a window and claw your way around on a steep roof, you will do much better to stay away from it. However, there are a few basic rules for safe roof work which every homeowner should be familiar with. The first is that you should never stand up on a roof;

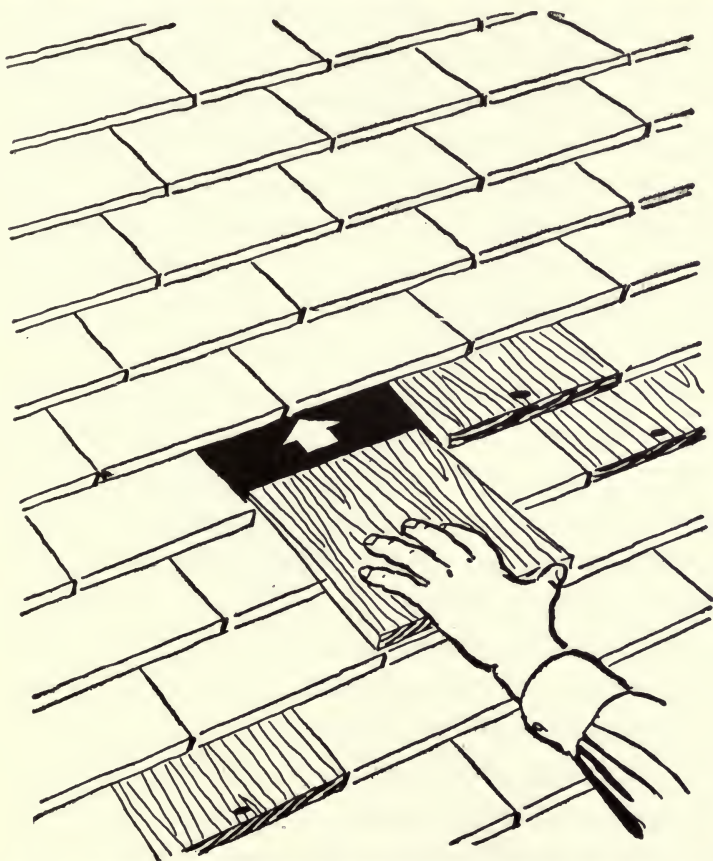
always work and move around on your hands and knees. When you do this you are not apt to trip, and you cannot fall. You have four points of contact with the roof, instead of the two you have when you are upright on your feet. The second rule is that you must have a safety-line looped around the chimney, or strung right across the



Roof inspections and roof repairs cannot be made properly unless you feel safe and secure during the entire operation.

roof and fastened to the ground at both sides of the house. If you do try roof work, you will be safer and your work will be easier if you first make sure of your safety.

Usually a roof will not give any trouble providing that it has been properly laid and that good material has been used. The even, unbroken, large areas of a roof sel-



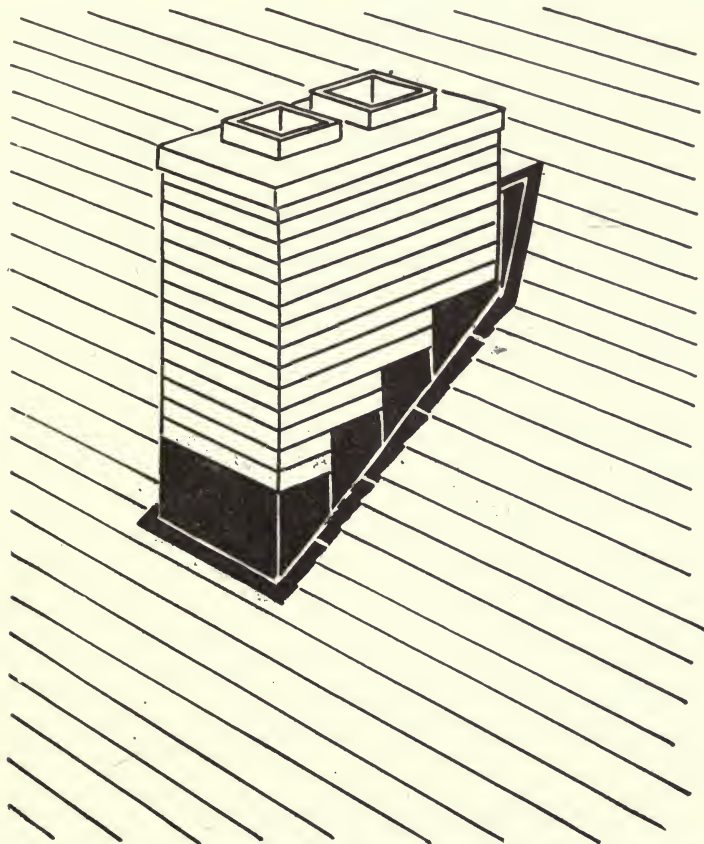
A roof shingle is simply one of a thousand other units. By unhurried procedure, any adult can fit and install a new one.

dom produce a leak unless a tree branch has scraped against it or a heavy wind has torn away a portion of it. In that case the manner in which the repair should be made is quite obvious. If the shingles are of wood, the old damaged shingles should be broken out and new ones shoved up to replace them. The new shingles can naturally not be nailed at the top as would be the case if you were laying a new roof, so one nail should be used in the center of the lower edge. If the damaged shingles are of composition or of asphalt, the same procedure should be followed. If the roof covering is of roll-roofing, the damaged sections should be carefully cut out, and new sections laid so the lower edge of the top strip laps over the upper edge of the repair. Roll roofing should be bedded in roof cement, and the edges well tarred with the same material.

Most of the trouble with a roof will be found around dormer windows, chimneys, or the vent stacks from the plumbing system. All of these parts of the house are flashed, which means that they have metal shields called "flashings" which protect the break in the roof surface, which their presence makes necessary. In short, every time you have anything coming through the surface of a roof, it has to have a protective shield. These shields or flashings should be made of copper, brass, zinc or lead. In other words they should be of non-rusting material. In an effort to cut down the cost of building, sheet-iron or galvanized iron flashings are often used. You can always detect this by the fact that rust streaks will invariably

show up on the roof surface after about a year's exposure to the weather.

Just as soon as streaks appear around the flashing, it is time to get busy. The correct way to treat rusting flashings is to clean off every speck of rust so that you are down to the bare metal. Then apply two coats of heavy



Chimney flashings are merely metal shields which provide a waterproof joint between the chimney and the roof covering. They should be watched, painted, and kept in good solid shape.

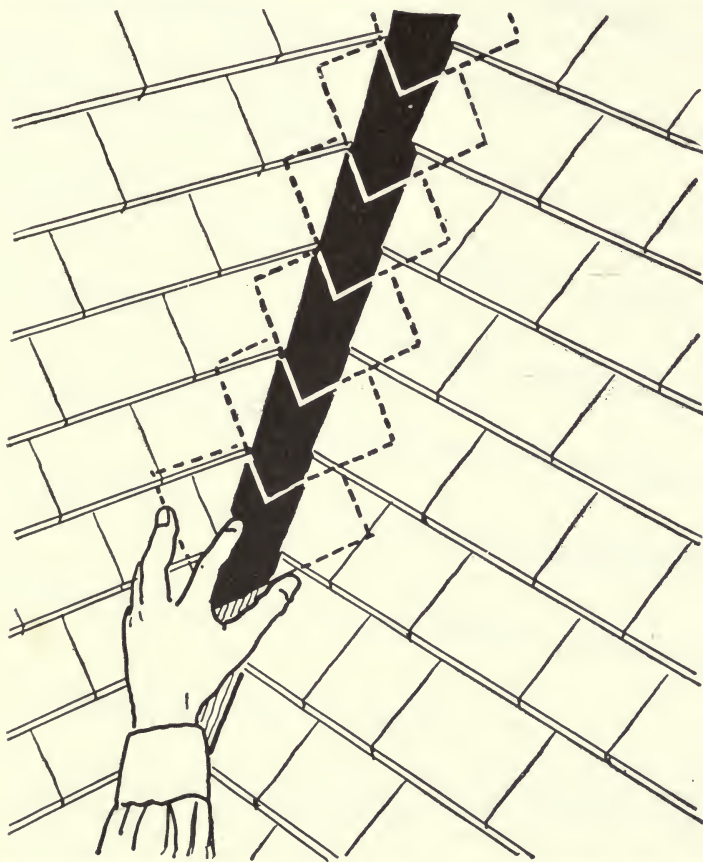
paint, allowing the first to dry before you apply the second. After the second coat is hard, cover the entire flashing with a $\frac{1}{8}$ " coat of non-hardening roofing compound. Tar is often used on such a job, but it is not good because it dries out and cracks. An operation such as described above should be good for from five to eight years in any normal climate.

The next most probable point of the roof structure to give any trouble or work up a leak, is in the valleys. These are where the direction of a roof changes, as in the case of an addition or ell built on the house. These long gulleys are a favorite spot for leaves and other debris to settle, and consequently they are often kept damp for months at a time. Naturally this means that the valley flashings are inclined to rust out rapidly. Fortunately, it is one of the most simple of roof repair jobs to accomplish, and it requires absolutely no skill whatever. The first step is to thoroughly brush out the valley and give the old flashing a coat of heavy paint. You then cut eight-inch squares of sheet copper, fold them once from corner to corner, as illustrated, and then shove them up under the shingles in an overlapping manner so that they make scales with the points toward the ground. Where you have roll roofing or strip roofing, you will not find valleys as a rule, but where your roof is shingled, you have to have valleys.

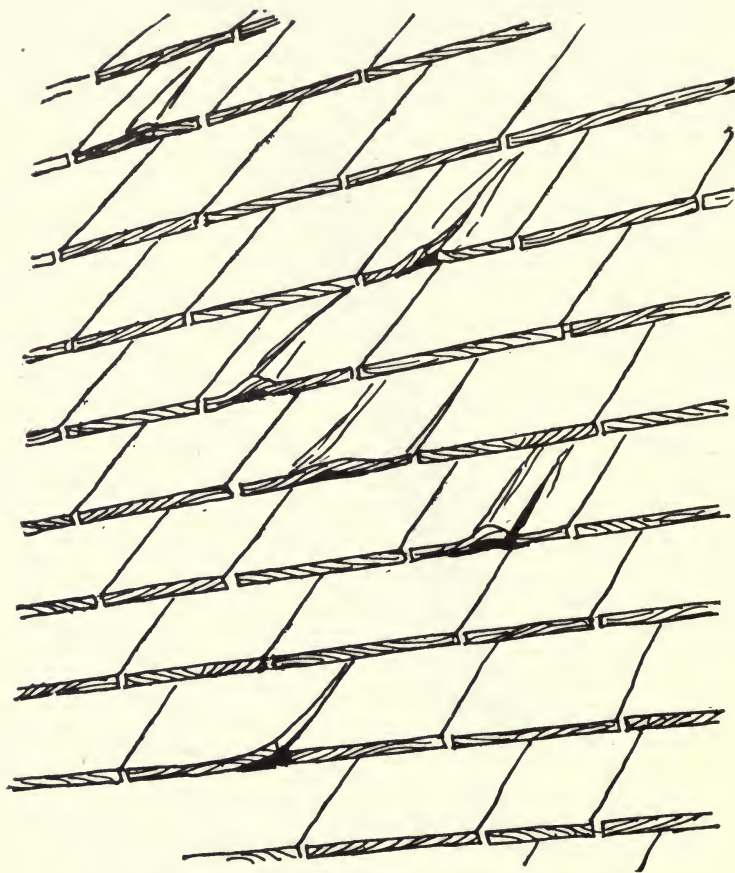
Some houses have slate roofs, and the only repair ever required will be to replace a slate. This is a job for a real slater, or expert; and the chances are a thousand to one

that if your roof is slate, you will never have any trouble with it.

There are also tile roofs, commonly called Spanish roofs. These are about in the same class as the slate roofs as they never deteriorate and seldom leak. If a tile should



Roof valleys are found where the direction of a roof changes. They are usually masked against wind and sun, and therefore do not dry out easily. They can be over-lapped as shown, if rust and deterioration have become evident in the material.



A curled shingle is actually a sick shingle which may or may not recover without treatment. It can be put back in correct shape with a well-placed, large-flat-headed nail. Shingles should be well wetted and flexible, to avoid splitting while they are being nailed back into an even, flat position.

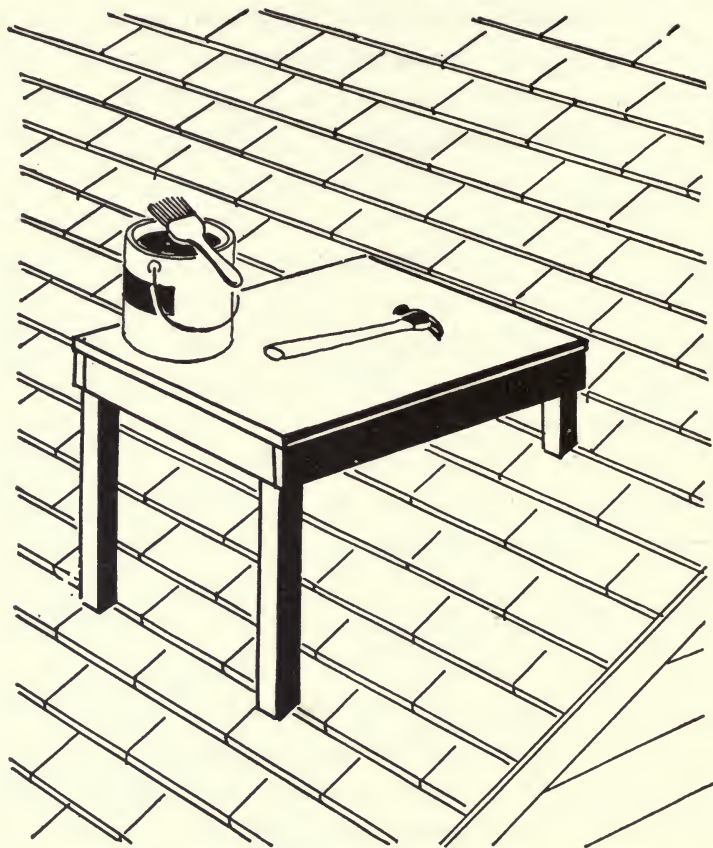
break, it is advisable to get an experienced man to replace it because you will probably manage to break a dozen slates in your effort to repair one. It should also be noted by the homeowner, that both slate and tile roofs are extremely slippery and dangerous to work on.

More than ninety percent of the roofs covering homes in this country are finished with wood shingles. Considering the light weight and the economy of the wood shingle, they are excellent if made of good wood such as red cedar, and particularly good if they have been treated for resistance to rot.

The main difficulty encountered with wood shingles is curling; and a curled shingle is a shingle which is apt to split. Curling can be easily noted from the ground, and it can be cured by driving a nail in the two lower corners of the shingle, which will bring it down to a flat position again. Great care should be used so as not to split the shingle. Use a thin wire nail that will drive easily, and that has a large flat head. If you should split the shingle, don't be alarmed. Cut a piece of tar-paper the size of the shingle, shove it up under the split, and then nail the two corners.

Temporary roof repairs to take care of an emergency are not at all difficult. The main rule is to be generous with your patching material and not try to just cover the bad spot. The second rule is to be sure to make all laps so that the water sheds off.

Handling tools and paint-cans and brushes on a roof is not an easy matter, but you can make it easy if you



All first-class building mechanics know enough to be at ease and to be comfortable while they are working. Do likewise.

will build a simple, small bench as illustrated, so that you have an even and level place on which to set your tools and cans. Professional roofers always use them, and you should do the same.

Chapter 3

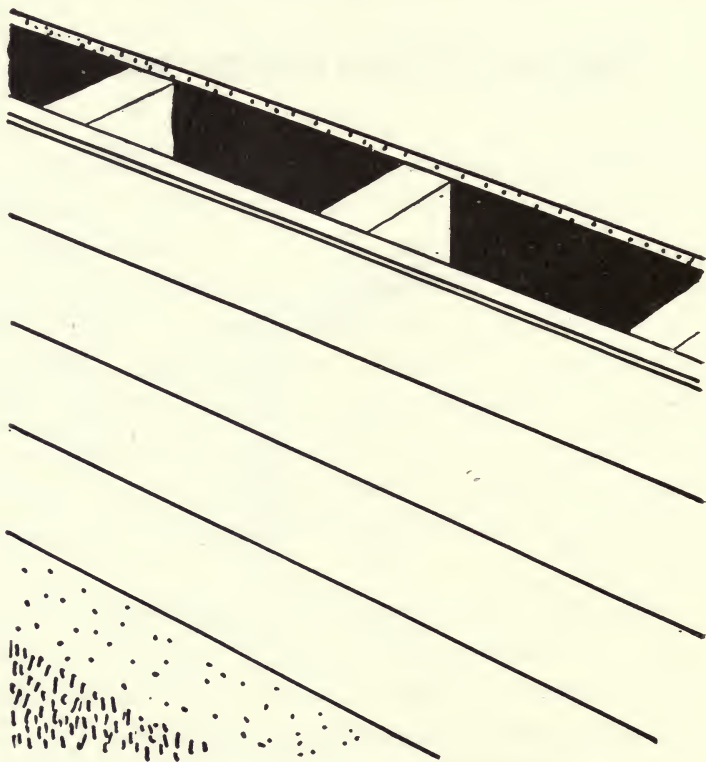
REPAIRS TO THE EXTERIOR WALLS

THE WALLS of the average house are double walls. In other words there is an exterior wall which is supposed to protect the house from all outside influences such as rain, snow, wind and weather; and an interior wall which is supposed to add decorative effect to the interior of the house and also aid in conserving heat and repelling the cold. If your house has solid brick or stone walls, the exterior wall also bears the weight of the roof; but the average house relies on the frame, which is in between the exterior and interior walls, for strength and for carrying the roof.

When the exterior or outside walls of a house are kept in good repair they will protect the house as long as it stands. You hear a lot about houses being built of unseasoned lumber, and you hear predictions that they will fall apart in a few years, but even green lumber seasons in time, and when it is taken care of properly it will eventually shape up and become sound enough. Of course, if you neglect the exterior walls there will be rapid disintegration, and once they are thoroughly bad the interior walls will be unprotected and the house will be done for.

The correct manner in which to treat exterior walls

is to keep them solid. If the walls are wood they should be kept well painted. When a board or plank springs out of place, even a fraction of an inch, it should be renailed



Most house walls are composed of an exterior and an interior wall with open spaces between them. This is where insulation goes.

back in place. All joints where boards meet, should be kept caulked tight with caulking compound or with white lead, before painting. If the walls are shingled, the shingles should be painted, oiled or treated, according to their com-

position. If a shingle warps, it must be nailed flat again. If the walls are of flat wood siding, called flush siding,



Exterior walls bear the brunt of all weather. They are attacked by rain, snow, cold, heat and dampness. They must be kept in shape.

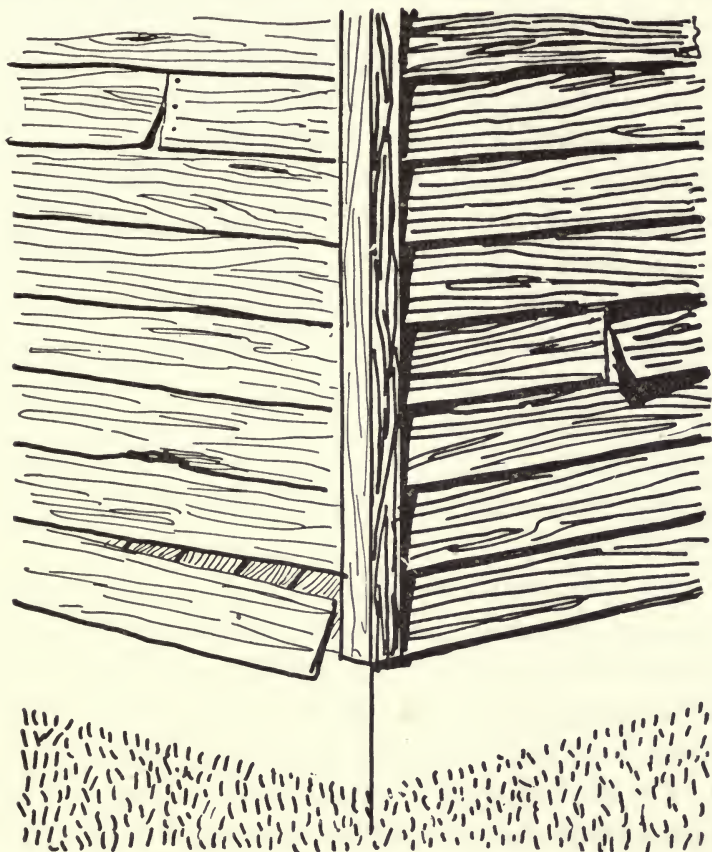
they should be watched for splits or cracks, and as soon as they appear they should be carefully filled.

According to statistics, more than ninety percent of the homes throughout this country have wood exterior

walls, and as a result, a great deal of research has been done by the U. S. Government and the producers of lumber, with a view to educating the public on the proper treatment of the material. There is no doubt about the fact that wood is the ideal building material, because it offers great strength combined with light weight and enduring qualities. Most of the research has proved that wood will last as long as other building materials which are exposed to the weather providing that it is treated properly. Exactly what we want to stress is probably best explained in this manner—If you take a piece of good wood of any kind whatever, and hang it up outdoors where it is exposed, it will be wet by rains and snows, but in between the storms it will have a chance to dry out. Ten years from now it will probably be as good as the day you hung it up; simply because it had a chance to dry. Take the same piece of wood and paint it, and put it in a damp spot where sun and wind never reach it, and in three years it will be quite rotted. Now—when you nail boards to the frame of a house to make the walls, the underside of those boards never sees the sun and never has a chance to dry. If the weather-side of the boards is painted, and the cracks and joints all filled so that moisture cannot get at the back of the boards, all will be well with the wall. If there are openings through which water can penetrate and soak the back of the boards all will not be well, and rot will set up. You must protect the exposed surface of good walls if you want them to last.

Many times you will see an old house with rotted

boards covering the walls. Every time, if you look carefully, you will see that the rotting had started and is the worst at the ends of the boards where there was a crack for the moisture to get in and go to work. Other times you will see where nail-heads are rusted and the wood immediately around them has become spongy. The same



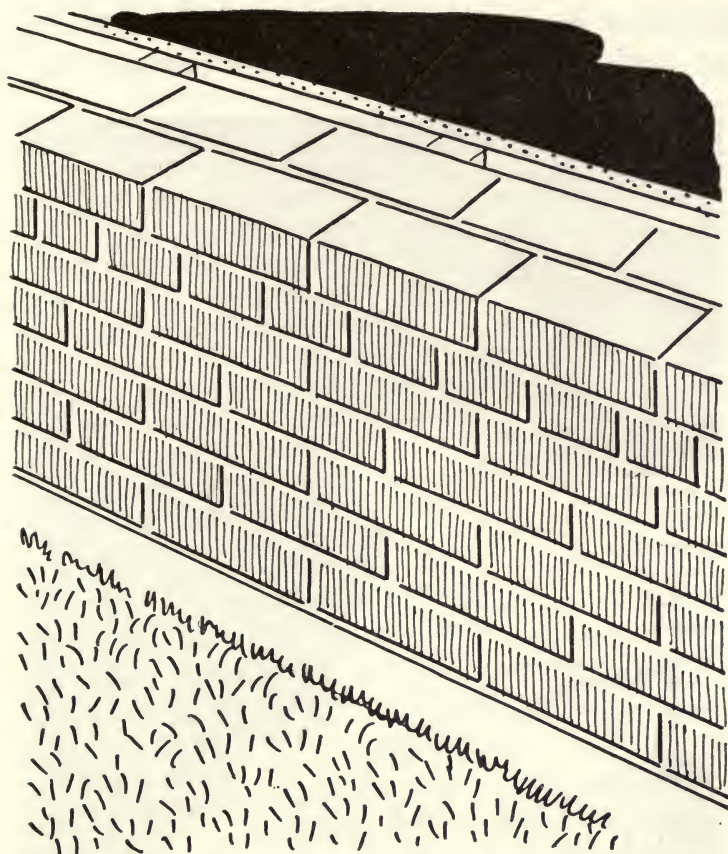
Invariably, decay will start where boards meet or where there is a joint in the exterior covering of the house. In spite of the best paint, wood walls will deteriorate unless the joints are full.

thing applies here, moisture got in through the hole made by the nail, and started the decay. This points up the absolute necessity of keeping wood walls tight.

In many of our New England towns and in some southern cities, you will find wood houses that have stood up for centuries and which are still as solid as a rock. In every instance you will find that they have been given attention at regular intervals. They have been caulked and puttied and painted, and every time a piece of wood showed signs of decay, it was cut out and replaced with a sound board. In some of the countries of the east, there are houses made of wood which have stood for thousands of years instead of centuries, simply because they have been rubbed with oil continuously until the wood has taken on the properties of stone, and because the joining in the first place was so perfect that it can hardly be seen. The climate naturally has a lot to do with the length of time wood will last, but you know all about the weather you should normally expect and can be guided accordingly.

The next exterior wall in line of popularity is the brick wall. As a rule these will be either a solid brick wall composed of two thicknesses of brick, or a brick-veneer wall composed of one thickness of brick backed up by a wood sheathing attached to the frame of the house.

The solid brick wall will rarely give the owner any trouble unless the brick itself is too porous, the mortar between the bricks too soft, or the workmanship bad when the wall was laid up.



Solid brick walls, composed of two thicknesses of brick, are a standard high-class exterior for both large and small houses.

Porous brick will quickly make itself evident by the fact that it will never seem to thoroughly dry out after a heavy spell of wet weather. However, there is a permanent remedy for this by using a good colorless waterproofing compound. To do the job properly, the wall must be allowed to dry thoroughly for at least a week.

The hotter the weather the better, as long as it is dry. The wall should be given a thorough brushing with a

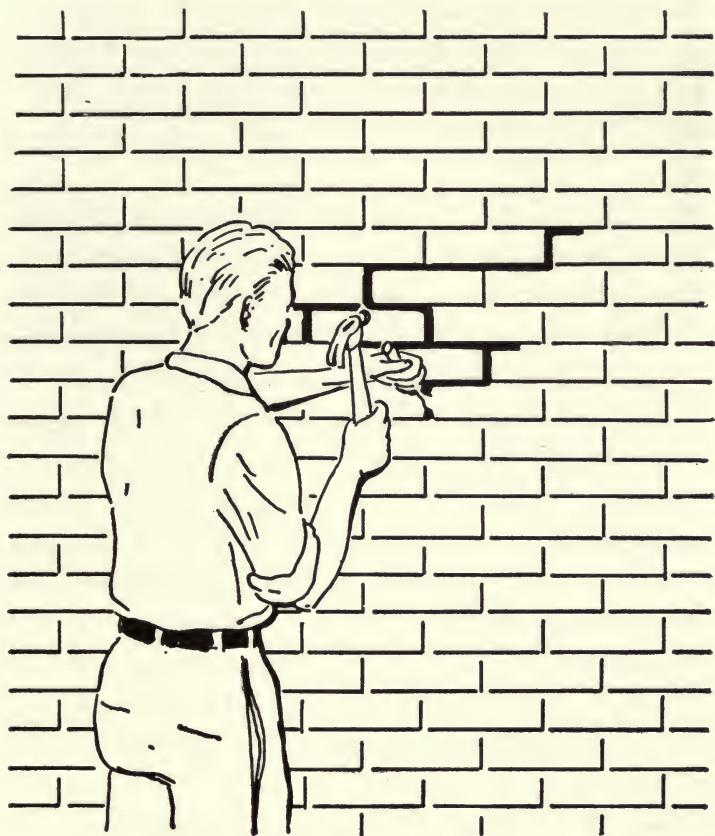


Porous or leaking brick walls may be tightened by the application of a good masonry waterproofing compound. Brick must be clean.

coarse fibre brush, so as to remove all dust and dirt. Then the waterproofing should be brushed on generously, and worked in vigorously. Spraying will not produce as good

a job as hand-painting. In most cases a damp wall can be waterproofed and tightened up in this manner.

It is possible to have a solid brick wall with good



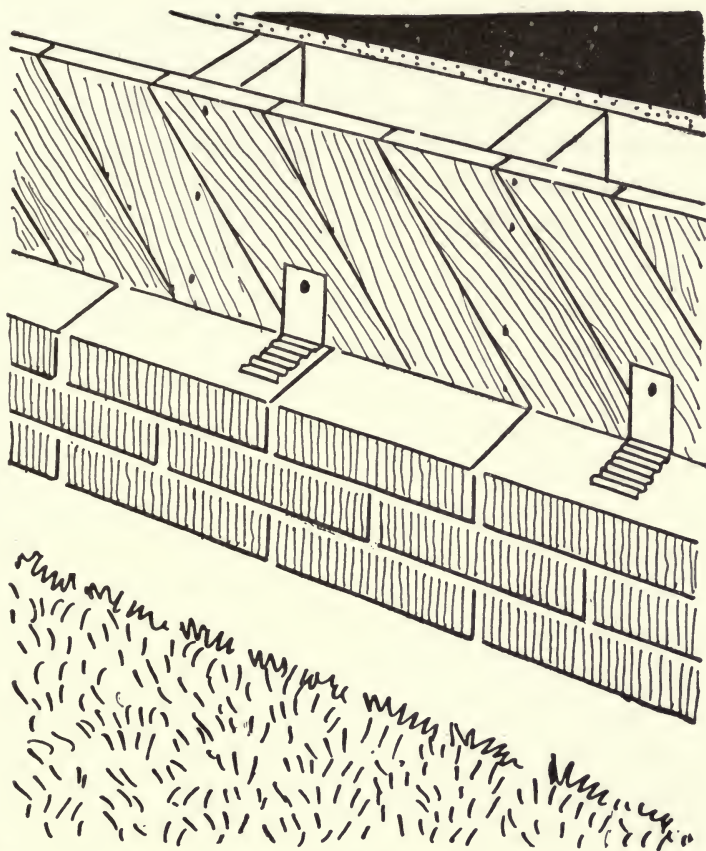
Defective mortar joints can be cut out and refilled with new mortar. Joints must be dust-free and well wetted before filling.

non-porous brick, and yet have it leak. Nine times out of ten the cause of this will be that the mortar used in the joints, and in laying up the brick, was mixed with

too large a percentage of sand or lime in its make-up. This is quite easy to detect, as you can run your finger-nail along the joints and they will "sand out," or in other words you can rub the mortar right out of the joints. There is a cure for this in taking a narrow brush and painting the joints with colorless waterproofing. This will penetrate the soft mortar and harden and preserve the joint.

In cases of very bad joint deterioration, it is often necessary to chisel out the loose pieces of mortar and re-point the bricks. This operation consists entirely of removing all loose mortar, brushing out any dust or sand, wetting the joint thoroughly, and filling it again with fresh mortar. A good mortar consists of four parts of good clean sand and one part of portland cement, with just enough water to make a paste of wheat-cake consistency. Great care should be exercised in cutting out a joint or any other part of a brick wall, because heavy blows of the hammer will tend to loosen up the other bricks around the area you are repairing, and may crack open joints which are thoroughly sound. Work done on masonry is something that you must not rush at. Take your time at it, for masonry has none of the resiliency of wood. It is hard and brittle, and therefore subject to fracture.

Brick veneered walls are more apt to cause trouble than solid walls, for the reason that they are only a skin or membrane of brick. When a veneered wall is being built, the mason will drive small steel clamps into the



The permanence of brick-veneered walls is largely dependent on the number and the proper fastening of the small anchors shown.

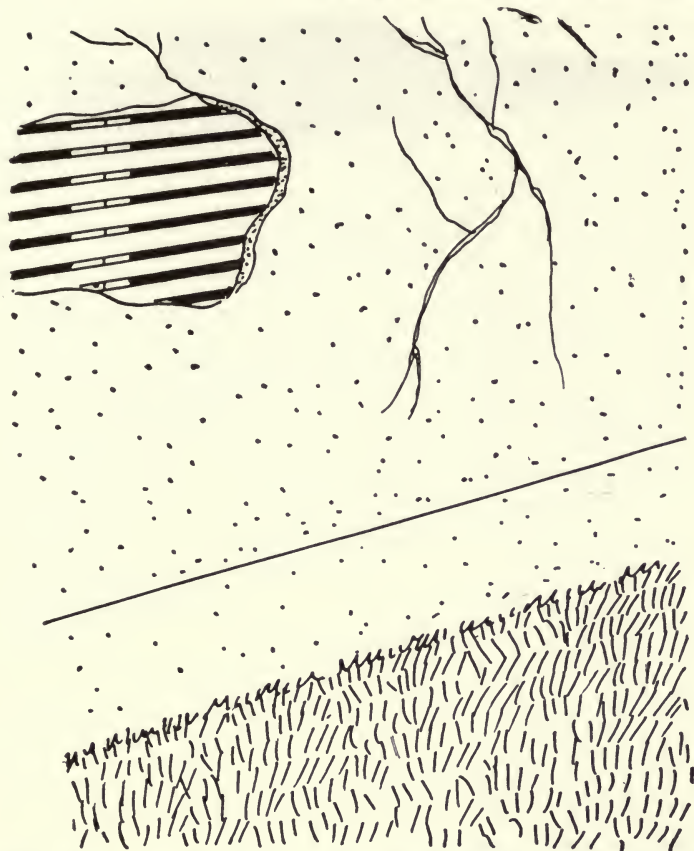
wood sheathing so that they will be built into the brick veneer and hold it tightly to the frame of the house. Quite often not enough of these "anchors" or ties are used, and as a result the wall may bulge out in places. There is nothing to be done here, except to remove the bricks that bulge and re-set them with additional anchors. In attempt-

ing this operation, the amateur is warned not to be too ambitious and not to take out any more than two square feet of brick-work at one time, else he is liable to bring down the entire wall. If the bulge should cover any considerable area, such as a space five or six feet long and two or three feet high, he would do well to consult an experienced mason.

The average bulge is developed because of lack of anchors, a heavy explosion in the immediate neighborhood, or because the weather has gotten behind the veneer and formed ice which force the wall out. Usually the weather will get behind the wall from around window or door frames, but if these points are kept caulked up, you should not experience any trouble from that cause.

Another favorite method of exterior house covering is stucco. Before the use of metal lath became general, wood lath was used. As soon as a crack developed in the coat of stucco, moisture would get in behind it and attack the wood lath. Probably everyone has seen stucco houses so badly gone that the coating was falling off in large pieces. Invariably these were wood lath jobs, and quite impossible to repair properly. When metal lath is used, the stucco job is liable to hold up better, and incidently it can be kept in repair with greater ease.

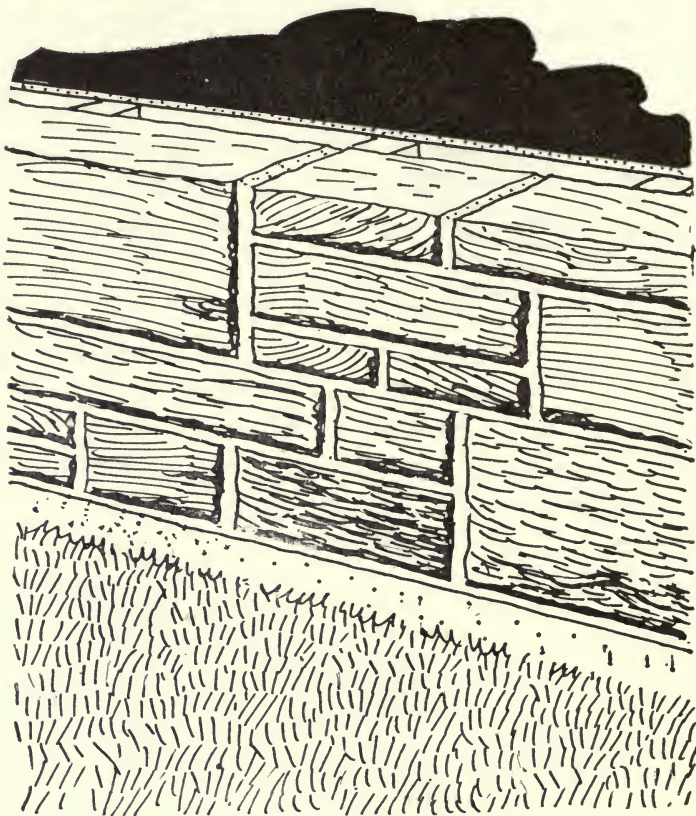
The first rule in keeping stucco walls in good shape is constant vigilance. As soon as a crack appears it must have immediate attention. If you neglect it, it will increase in size rapidly. There are special paints on the market which are made for use on stucco walls. They will



Care should be exercised in maintaining stucco walls. All small cracks or defects should be repaired at once to avoid growth.

fill all hair-cracks and tighten up the surface. It is also good practice to paint stucco walls with a coat of thin cement, which will do the same job.

You will frequently see where a slight settling of the house has caused long vertical cracks, and where a compound with an oil base has been used to repair them, with



Solid stone walls usually denote a house of excellent quality. Stone-veneer requires the same attention as brick veneer.

the result that the oil stained the surface for a few inches on both sides of the cracks and the house looks very badly. That is not the way to repair a stucco wall. If caulking is used, it must be non-staining. There is no use in advertising to the neighborhood that your house is in bad shape, particularly when the proper methods of repairing are available to you.

Exterior stone walls usually denote a solid job of house building. Once in a great while you do find a house with stone veneer walls, but not very often. The care of these follows the line of recommendations for brick veneered walls. The solid stone job will never require any repair whatever, except perhaps to the joints, and these should be treated as already suggested. Laying up a stone wall is quite an art, because the stone-mason must study each stone he uses, turning it over and over before he decides how to bed it. Usually when he has finished, you will find a piece of masonry which is good forever. Watch the joints, and you are doing all that the amateur could hope to accomplish.

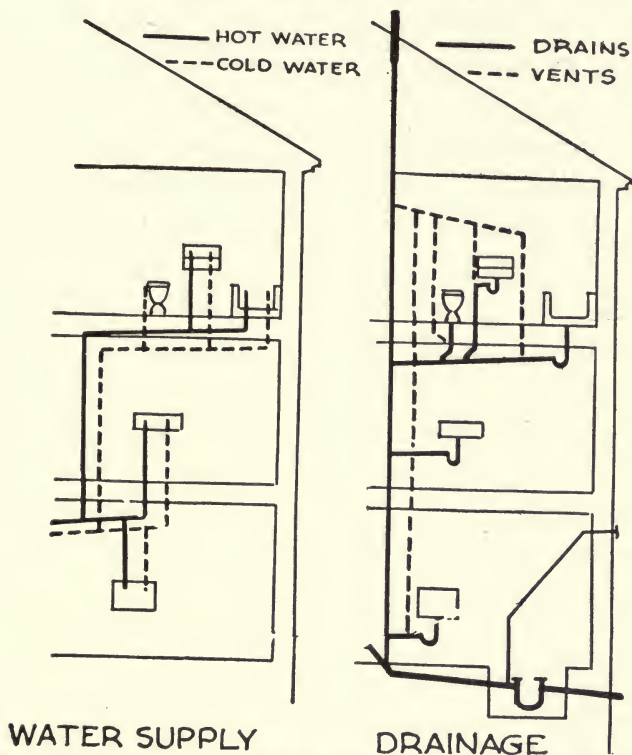
Chapter 4

REPAIRS TO THE PLUMBING SYSTEM

PEOPLE WHO are used to living in modern, well-equipped houses, know that there is nothing which contributes quite as much comfort and convenience to everyday life as the plumbing. They also know that when anything goes wrong with it they are very greatly inconvenienced. When you consider the fact that almost all household activities depend upon an ample supply of hot and cold water, for washing, shaving, bathing, laundry, household cleaning and cooking, the plumbing system looms very large. When you further consider that over one hundred and eighty gallons of water a day pour out of the faucets or showers or flush-tanks of the average house, the drainage system, which is an integral part of the plumbing, also becomes a very important item. To keep the plumbing system in good repair is not a hard job. The first requirement is a thorough understanding of it. If the householder will devote a few minutes of concentrated attention to the matter, he can readily understand what the plumbing system means, how it works, why it works, and how it can be kept in repair without great cost. It is actually a very simple matter.

All residential plumbing systems are composed of two

separate sets of piping. The first is the supply system which starts at the water-main, and which conveys water into the house and distributes it to the various fixtures such as bath-tubs, basins and sinks. The second is the drainage



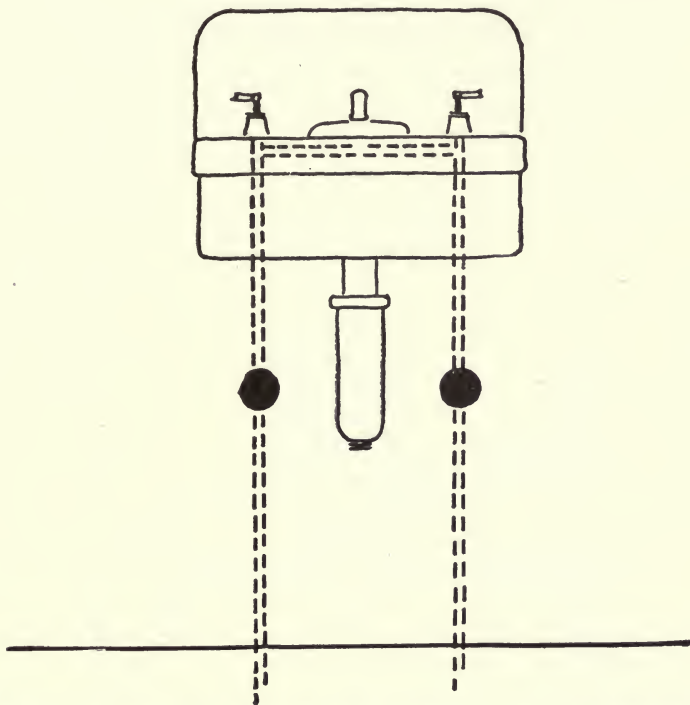
The plumbing system of the average house is not quite as complicated as the layman imagines. There is a supply system and a drainage system. If you study them, you will find them simple.

system which takes the used water away from the fixtures and disposes of it. When the supply system supplies and the drainage system drains, you have a plumbing system which functions properly.

The supply system is always under pressure, unless of course it is shut off. That is the reason why you have such a flood when a pipe bursts. The pressure is necessary, otherwise the water would not raise from the basement or cellar up to the second floor bathrooms. The drainage system is not under pressure, but operates entirely through gravity.

The first thing that the homeowner should know about plumbing is where and how to turn off the water. This is essential knowledge so that immediate action can be taken if a pipe bursts, a faucet jams in an open position, or any other defect becomes apparent. All houses have a control valve on the water main, and as a rule it is on the pipe where the main comes through the basement wall. When this is shut off, all pressure in the pipes throughout the house is relieved, and all water is prevented from coming into the house until it is reopened. Everyone living in the house should know where this valve is, and how to shut it. When it is closed you can repair faucets, flush-tanks and valves without trouble. The valve should not be covered up or buried out of sight behind trunks, screens or tons of coal. When you want to get at it the occasion will undoubtedly be an emergency, so easy access is essential. In a house that has particularly good plumbing, you often find that each of the hot or cold water pipes leading to any of the fixtures has small control valves which enable you to shut off the water to the fixture without interfering with any other fixture. These are known as independent or separate controls and are very helpful, but unfortunately not found in every house.

If they do exist in your plumbing system, you will find them under the basins and sinks, and on the small supply pipe leading to the flush-tanks. The homeowner who wishes to familiarize himself with the plumbing, would



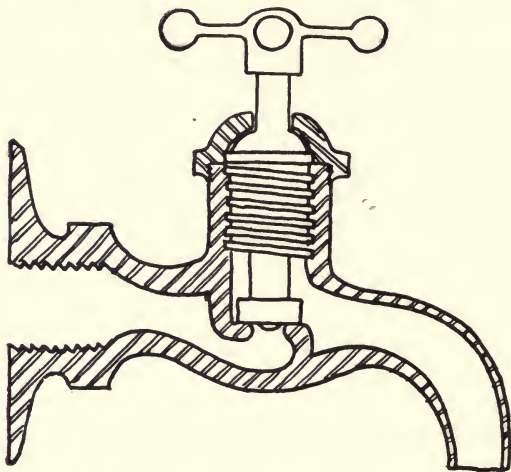
A good plumbing job will furnish each plumbing fixture with independent control valves, so that repairs can be made without cutting off the water-supply from every part of the house.

do well to play around with the main shut-off valve and the independent valves, and make sure that they are working and that he understands them. When an emergency does arise he will then know what he is doing, and he

can tackle the problem like a professional instead of like an amateur.

REPAIRS TO LEAKING FAUCETS

The average house will be equipped with what are known as compression faucets. These get their name from the fact that a soft rubber or fibre washer inside of them is compressed down when you turn the handle, and blocks off the orifice or hole through which the water passes. Continued use wears the washer away or distorts it so



There is nothing at all complicated about the average standard hot or cold-water faucet. The small washer which closes or opens the orifice through which the water flows, is easily replaced.

that it does not completely close the orifice, whereupon you have a dripping faucet or one that runs continuously. To change the washer takes about five minutes. The water should be shut off either at the main or at the control valve under the fixture. Unscrew the bonnet or cover of

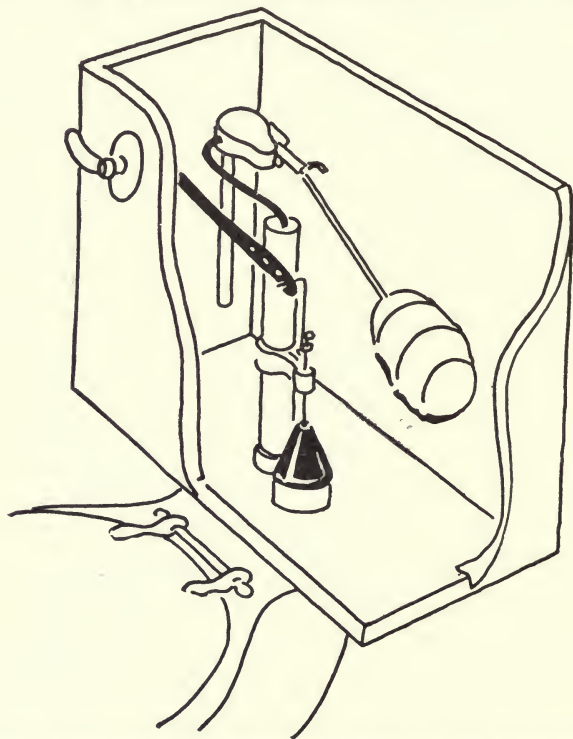
the faucet through which the stem passes, and then keep turning the handle as though you were turning the faucet on. The stem, bonnet, and handle will come right out of the faucet, and you will see the washer on the end of the stem. Remove the small set-screw which holds the washer in place, and replace it with another exactly the same size. Have no fear of replacing things in the wrong way, because the construction of modern faucets is such that it will be impossible.

You will always find that faucets that are in constant use will give the most trouble. The kitchen sink faucets for instance. You will also find that the hot water faucets need re-washing more often than the cold water, because the hot water burns the life out of the washer more rapidly. You should keep a small box of assorted washers on hand, and you should buy goods ones. Cloth-inserted rubber or good fibre washers will last for quite a few years, while the cheap compressed paper variety may not last for six months. The difference in price between the two is not even worth mention.

You may notice sometimes that the handles of the faucets, which at first were in alignment, gradually have moved out of line. They can always be straightened out and matched up, by simply removing the screw on top of the handle, lifting the handle off the stem and replacing it in line with the other. When the handles are matched up the fixture looks more shapely and orderly.

REPAIRS TO LEAKING FLUSH-TANKS

There is nothing more annoying than a flush-tank which runs constantly, and there is hardly anything that is easier to fix. The average closet-bowl has a low flush-



The so-called complicated and mysterious workings of the flush-tank above the average closet-bowl, is actually a gem of good, plain, mechanical engineering. Remove the tank-lid and operate the mechanism a few times, and you will see all mystery dissolve.

tank with a removable lid. When this is lifted off you can see the entire operating mechanism. It may look very complicated, but if you will take the trouble to work the tank

at times and observe the operation, you will see that it is an extremely simple mechanical arrangement. The main feature is a round rubber ball which fits into a hole in the bottom of the tank, thus completely closing it. When you twist the handle on the outside of the tank, a series of levers lifts the ball out of the hole and allows the water in the tank to rush into and flush the closet. When the tank has emptied, the ball plops back in place and allows the tank to fill again.

Nine times out of ten the trouble with a flush-tank is that this rubber ball has become worn out by use, hardened up by constant immersion in water, or worked out of shape. You will find that you can unscrew the ball from the end of the rod to which it is attached, and replace it with a new one. In most cases you will find it unnecessary to touch anything else, and in a few minutes you can complete a repair that would cost you several dollars to have done professionally. You will find that tank-balls are made in several grades. A cheap one can be had for twenty-five cents, but the very best will not be worth more than fifty cents.

On rare occasions one of the levers are bent out of line, or the float which controls the flow of water into the tank may become stuck. Either of these two troubles will be perfectly obvious to you, and by watching the operation you will see where the lever has to be bent back into position, or the float-rod bent so that the float can travel up and down without interference.

HOW TO REMOVE A STOPPAGE

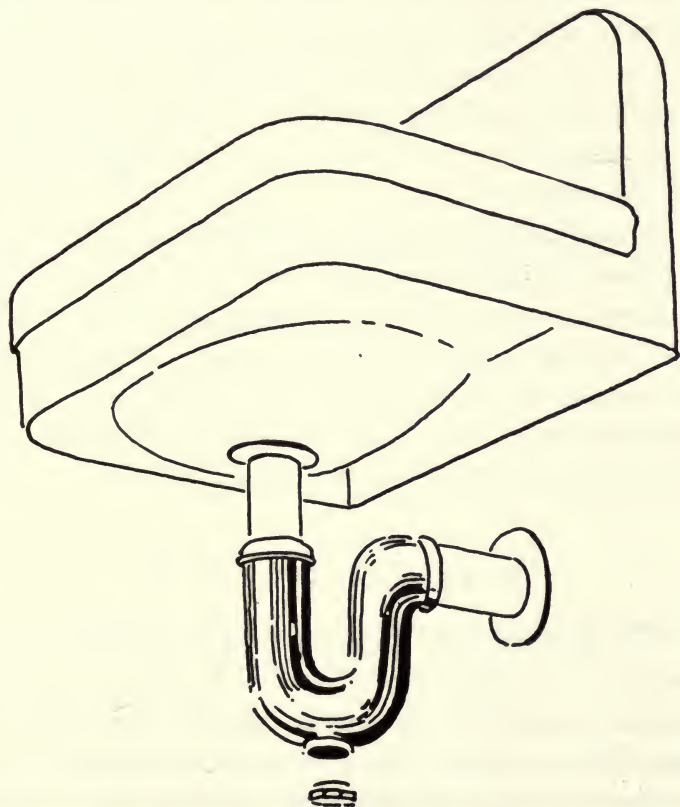
Most of the stoppages in plumbing fixtures come as a result of plain carelessness. Sinks stop up from an accumulation of grease inside the drain pipe or in the trap



The average stoppage is not serious enough to require skilled attention. The rubber plunger will remove many obstructions.

beneath the sink, basins stop up from an accumulation of hair and soap residue, and closet bowls because someone drops a wash-cloth or nail-brush into them.

The average sink stoppage can be cleared away by using one of the caustic compounds which are sold everywhere, and plenty of hot water. If this fails the next step is to use one of the rubber-plunger tools known as the "plumber's friend." In the event that neither of these bring relief the next step is to open the trap beneath the sink, by unscrewing the small plug at the bottom of the



The clean-out plug beneath a basin or sink, can be removed to enable you to work on stubborn stoppages or retrieve lost gems.

trap, and insert a heavy wire with the tip bent over to form a hook. With this you can attack the built-up grease in the line and clear it out. Great caution should be used in working on a trap when you have just used any caustic material, as it will burn the hands.

The average stoppage can be taken out of a wash-basin by pulling up the plug-stopper and removing any accumulation of hair which has wound around it. You may have to unscrew the controlling rods at the back of the basin to accomplish this. Stoppages caused by small hairpins, etc., can be removed by taking the plug out of the bottom of the trap and fishing for the obstruction with the bent wire.

A stoppage in a closet-bowl is apt to be serious, but the chances are that you can break it out by using what is known as a snake. This is a long thin ribbon of steel, with a handle on one end which you can rotate. The end of the snake is inserted into the bowl and right through it into the drain. More often than not the rubber plunger will force any obstruction through the bowl.

THAWING OUT FROZEN PIPES

The first thing to know about a frozen pipe is that too heavy an application of heat will cause it to burst. The reason is that the heat causes the ice with which the pipe is filled to expand. The correct way in which to thaw out a pipe, is to fill a bucket with very hot water and put some heavy cloths in it. Wring out the cloths and wrap

them around the pipe. As soon as the cloths chill, reheat them. In a few minutes you will hear a crackling sound which indicates that the ice within the pipe is breaking

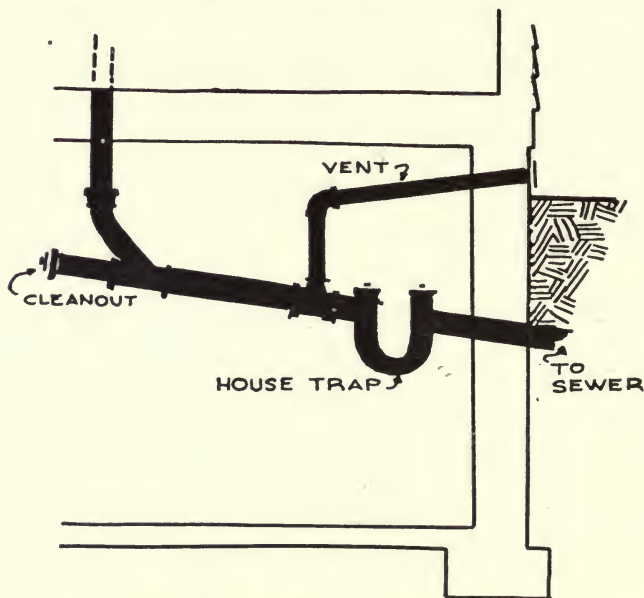


Frozen pipes need not burst while being thawed out, if you use the proper method. Great heat, too rapidly applied, is dangerous.

out and melting. The mild heat of the cloths is far better than the violent action of a blow-torch. Another good method, if you are able to use it, is to place an electric heater near the pipe.

TO REMOVE A STOPPAGE IN THE HOUSE SEWER

In the basement of your house you will notice heavy black pipe, with joints in it at four or five foot intervals. It is usually along one wall or suspended from the ceiling. This is the house sewer, and the drains from all the fix-



The house sewer, if properly installed, is a safe-guard against sewer-gas, or odor from cesspool or public sewer in the street.

tures in the house flow through it to the public sewer under the street, or to the cesspool or septic tank if you live in the suburbs where there are no public sewers. All house sewers have a clean-out plug at the end which can be removed, and a snake or long rod shoved through to clear it out. House sewers also have what is known as a

house-trap, and it is here that wash-cloths and other large obstructions are most liable to lodge. The trap always has clean-out plates on the top of it, which can be screwed out and the inside of the trap exposed.

PLUMBING TOOLS

The tools required by the householder to take care of the general run of plumbing repairs and adjustments are not many. They consist of a medium-sized Stillson and monkey wrench, a medium screw-driver, a pair of heavy pliers (known as gas-pliers), a set of end-wrenches and a roll of heavy wire. The rubber plunger and the steel snake have already been mentioned. Equipped with these tools, the average man can take very nice care of his own plumbing, and if he is called upon to do several small jobs in the course of a year, he will have saved the cost of them many times over.

The idea of saving money by doing your own repair work is well worth thinking about, but there is more to it than that. When you have to wait for professional help in an emergency, any amount of damage can go on until it arrives. It is the old story of the stitch in time; and when you have a fairly good idea of what to do, and how to do it, plumbing emergencies will hold no terrors for you.

Chapter 5

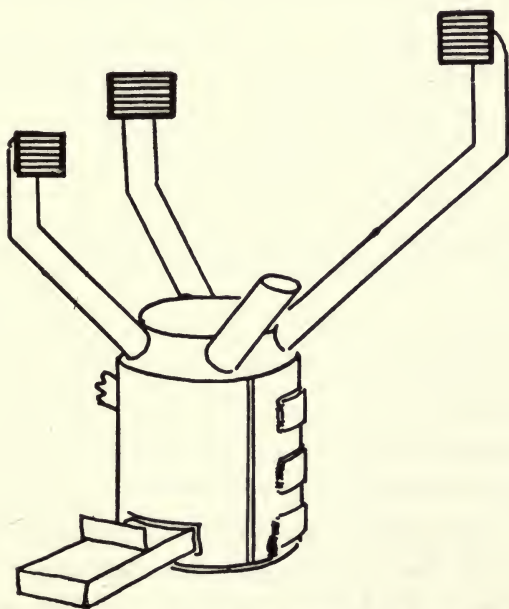
HEATING REPAIRS

THERE ARE three general types of heating plant in use today. They are the hot-air plant, the steam plant and the hot-water plant. There are three types of fuel available, coal, oil and gas. Any one of the heating plants can be operated on any of the fuels. You may have a hot-air plant that burns coal, but it may be converted to burn oil or gas. You may have a hot-water plant originally intended to burn oil, but it may be converted to burn gas. No matter what combination exists in your own house, it all simmers down to the fact that you pay for a certain amount of fuel wherewith to make yourself comfortable, and whether you get your money's worth or not depends entirely upon how well you keep your heating plant in repair. It is probably a fact that a good one-third of all the fuel consumed in the homes of the country goes to waste because the heating plants are limping along with improper adjustments, faulty damper control, or simply clogged up with soot and dirt. Fortunately, the basic rules of keeping a heating plant in good shape apply to all three systems. Rule number one is to have a proper adjustment for the consumption of the fuel you are using. Rule number two is to have a proper adjustment of the dampers

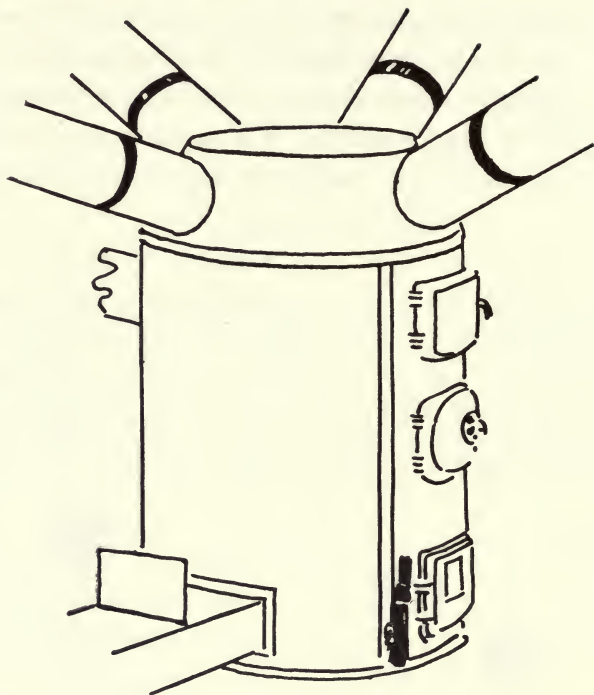
which control the rate at which your fuel burns. Rule number three is to keep the entire plant cleaned and oiled. When you have taken care of these simple matters, you will find that repairs will be at a minimum, fuel bills reduced, and many years added to the life of your heating unit.

Starting with the coal burning, hand-fired hot-air furnace, which is the most uncomplicated of all standard heating systems, we will endeavor to show you what to do and where to do it, so that your heating plant will be kept in good repair and at maximum operating efficiency.

The standard hot-air furnace consists of a cast-iron



The plain hot-air furnace is the least complicated of all home heating plants, outside of the fireplace.



The fresh-air inlet to hot-air furnaces should be adjusted to provide the correct amount of air admitted to the heater.

stove, technically known as a fire-pot, with a door at the top for throwing in the coal, and a door at the bottom for taking out the ashes. There is an opening at the top through which the smoke and gases from the burning coal is piped into the chimney. Around the fire-pot or stove there is a shell of sheet-iron which completely incloses the fire-pot, and the air between this shell and the fire-pot becomes hot, and is led through ducts to the various rooms of the house. There are hot-air furnaces which have only

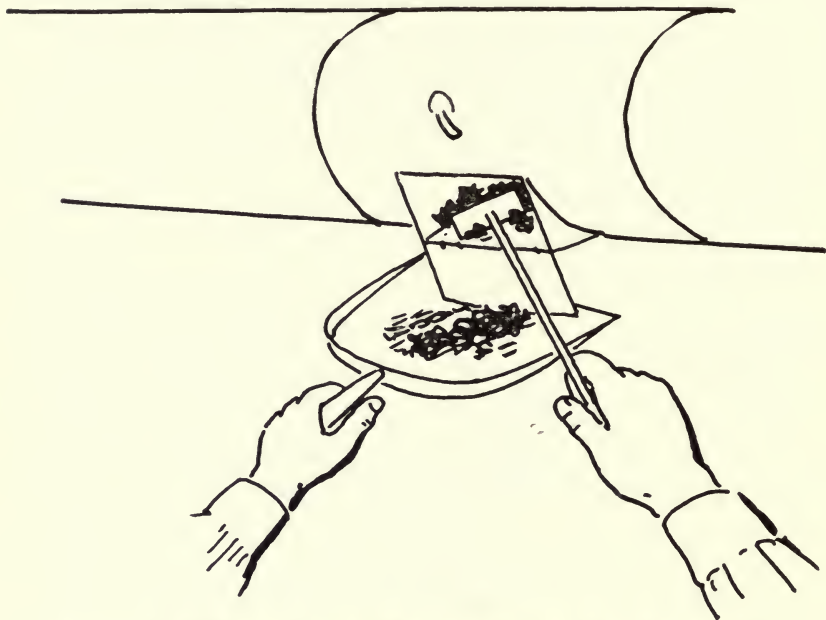
one duct, a very large one, and these are known as pipeless or one-pipe furnaces.

Keeping this type of heating plant in good repair consists entirely of keeping the ash-pit at the bottom of the furnace well cleaned out, because an accumulation of ashes will reflect the heat and burn out your grates. It further consists of making sure, after you have shaken the grates, that they are flat-side-up so that live coals will not fall through into the ash-pit. It further consists of cleaning out the smoke-pipe once a year, so that accumulated soot will not interfere with the draft.

When it comes to correct draft control, that is a matter which is entirely up to the homeowner to study out himself, because no two houses are alike. It will only take a little concentration. If your house is situated on a hill-top where you have strong winds blowing over the top of your chimney and setting up a high draft, you will learn to close the damper enough to check it. In exact reverse, if you find that your fire dies down under a half-closed damper, you must learn to keep it at the three-quarter-open position.

At times this type of furnace will give off a strong odor of coal-gas. The reason may be that the cementing of the joints in the fire-pot is not tight, and gas escapes through them. In this case you will have to remove the outer shell of sheet metal and re-cement them. As the shell is put together with bolts and nuts, it is easy to remove. Use furnace cement on the joints and be liberal with it.

Cleaning the smoke-pipe should take about ten minutes if there is a clean-out in it. If not, you will find that the smoke-pipe is simply a series of round sleeves, one of which slips into the other, and there is nothing compli-



A properly installed smoke-pipe will have a clean-out door through which soot can be removed without difficulty.

cated about taking them apart and putting them together again. You must be sure, however, that they are inserted into each other the proper distance, and that you re-cement the joint where the smoke-pipe goes into the chimney. If any wires have been used to support the smoke-pipe, be sure to replace them exactly as you found them.

In some houses the hot-air furnace may have four or

five ducts leading to the different rooms, and one or more of these ducts may have to travel through the basement for twenty or thirty feet before it turns up to a room. If the basement is cold these ducts will naturally be chilled,



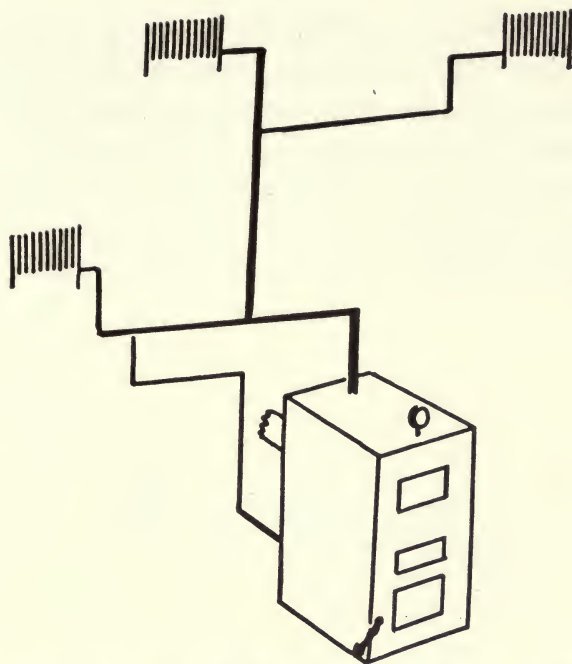
Asbestos-paper covering, will help to keep hot-air ducts from chilling. In cold cellars, this method has been highly effective.

and the hot air traveling through them will in turn be cooled off. The remedy for this is to buy a roll of asbestos paper, and cover the ducts with it. You will find that the hot air delivered will be a good thirty percent hotter, and you will be getting just that much more out of your fuel.

While on the subject of fuel, it might be well to say that there are a great many grades of coal. The fact that you buy the cheapest grade, does not mean that you are being economical. The sure indication of what you are getting for your money is right in the ashes you take out of the ash-pit. If it is fine ash and has few clinkers in it, the chances are that it is good. If the ash is full of clinkers and pieces of slate, and half-burned pieces of coal, you had better change, or at least consult your coal dealer and ask his advice. Quite a few dealers offer a free service intended to assist their customers in burning the proper size and quality of coal. The service is usually fair and impartial, and well worth asking for.

When the heating season is over, and you shut down your furnace, you should clean out the last fire, and all the ashes. Both top and bottom doors should be left wide open, so that there will be a good drying draft through them. This will prevent any undue rusting. It is also a very good idea to clean off the doors and the damper and give them a coat of black varnish, because in summer time there is usually quite a lot of humidity in the average basement, and door hinges and slides will rust up if the metal is bare.

The average steam heating boiler can hardly be called a complicated piece of mechanism. It consists of a cast-iron receptacle in which you burn either coal, oil or gas, and at the top it has a series of hollow cast-iron sections in which there is water. The heat from the fire boils the water, produces steam which is conveyed through pipes

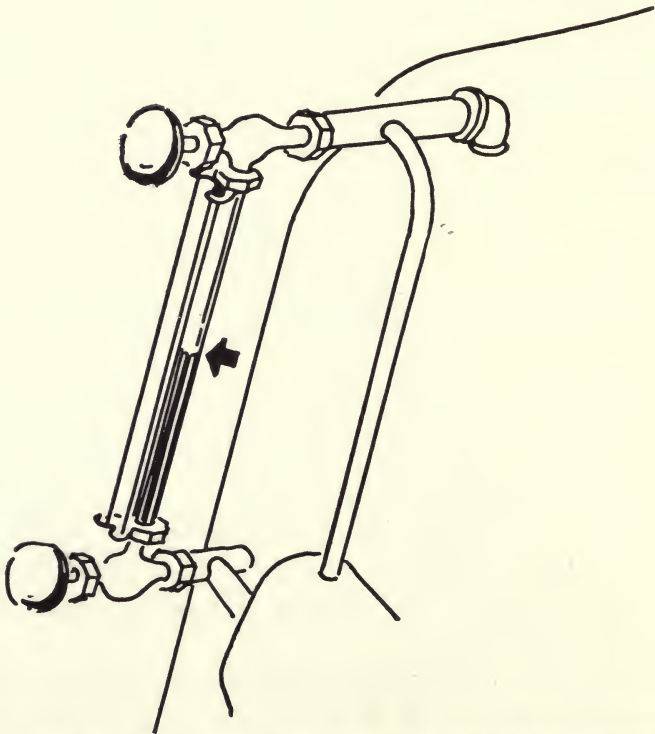


*The plain steam plant is a highly effective heating medium for a small house.
It is economical to install and easy to operate.*

to the steam radiators, and makes them hot. After the steam heats up the radiators it naturally condenses and becomes water again, and then it flows back through the same pipes to the boiler where it is again converted into steam. Because of the inevitable loss of some steam through the radiator valves, it is necessary to replenish the supply of water occasionally.

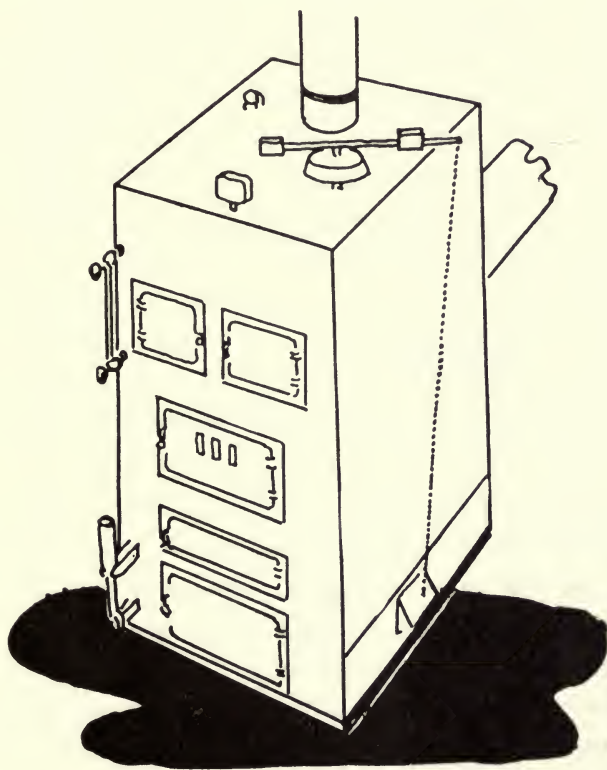
To keep a steam plant in good repair requires very little time or attention. If you are burning coal, everything that has already been said about coal, ashes and draft

control in a hot-air furnace, applies to the steam boiler, but there are other matters as well. The first is that you must always keep the water level in a steam boiler at the right height. If you do not you will burn out the boiler, and probably crack the sections containing the water. (It is exactly the same thing as running your car without any water in the radiator.) On the side of your boiler you will



Steam boilers must be kept supplied with water. Usually there is a gauge on the outside of the boiler which will show the level of the water inside.

see a water gauge, and it will show plainly how much water is in the boiler. As a rule there will be a mark showing how high the level should be. If there is not, half-way up is a good bet. On top of your boiler you will find a safety-valve. It is there so that it will relieve the steam pressure before it gets high enough to rupture the boiler; which may happen if you forget to put water in and have



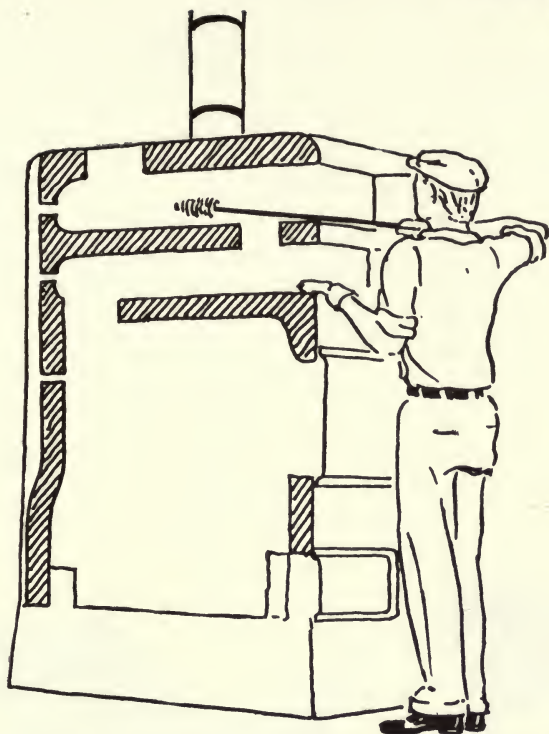
The average steam plant will have a damper control which closes the draft when the steam pressure gets high.

a hot fire going. Your boiler may also be equipped with an automatic draft control. This is usually a flat disc from which protrudes a long lever. From this lever a chain is attached to the bottom door of the boiler. If the pressure gets too high it works against the disc, and the lever drops down and the draft at the bottom of the boiler is closed. It may sound complicated, but if you will stand in front of your boiler and operate it by hand, you will see what a simple mechanical operation it really is.

If you are burning oil in your steam boiler, you will probably have a thermostat which will automatically start the oil-burner when the temperature in the house drops below the mark you have set it for. In that case you will not have an automatic draft control on the bottom door. In fact the bottom door will be sealed up.

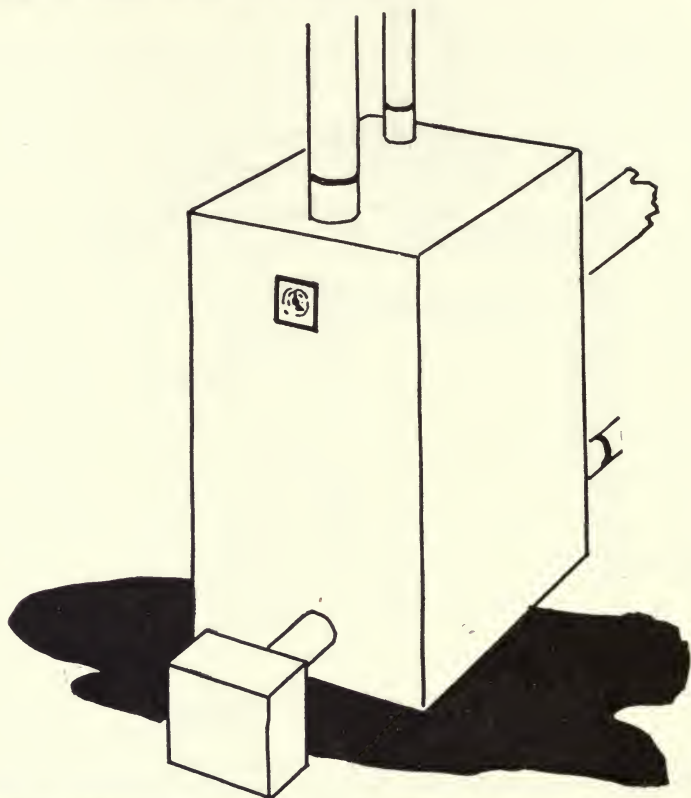
The main feature to be attended to, outside of seeing that you have enough water in the boiler, will be to keep the flues inside the boiler clean. You will find two or three small slot-like doors near the top of the boiler at both front and back. If you open one of these, you will expose the sections inside which contain the water. In all probability you will see about a quarter of an inch of soot lying on top of the sections. This prevents them from heating properly and making steam rapidly. By using a cleaning tool, which looks like a small hoe, you can draw off this soot and dust. If you will insert a wire brush, and give the sections a good scrubbing, your job will be that much better.

The oil-burner nozzle should be adjusted so that the



All boilers have flues or tubes which gradually become clogged with soot. A boiler cannot operate efficiently unless the flues are clean. The small clean-out doors make this easy.

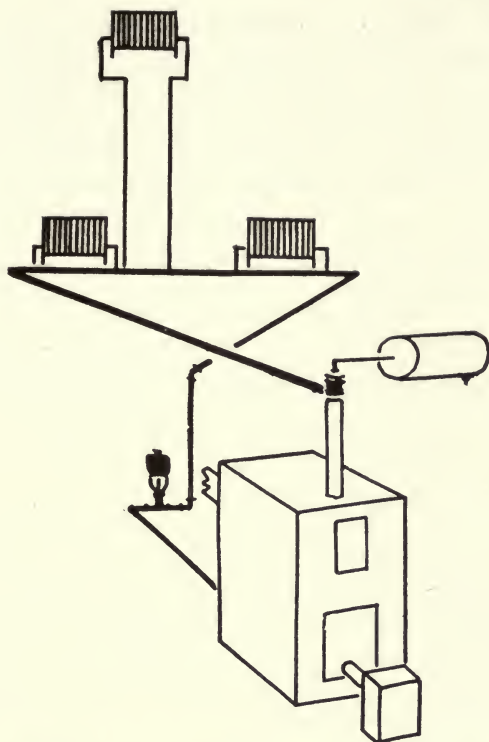
flame burns with a bright white glare. When you see yellow in the flame you are not getting complete combustion and your flues will soot up rapidly. All oil burners have an adjustable valve which permits you to mix more or less air with the oil as it is sprayed out flaming. You should secure a pamphlet describing the particular make of burner which you have, read it thoroughly, and make your adjustments accordingly.



Proper adjustment of an oil-burner is essential to economical operation and to prevent sooting of the boiler flues.

When the steam boiler burns gas as a fuel there is very little for you to attend to, because as a rule the gas company makes the adjustment when the burner is installed and you will probably never have to change it. Gas will never soot up the boiler flues or the smoke-pipe because gas is all pure fuel while coal and oil are not.

The same recommendations made for closing up a



Hot-water heating plants are usually economical because once the water in the system is hot, it takes but little energy to maintain the temperature at a fairly even level.

hot-air furnace after the heating season apply to a steam plant, along with the added advice that the water be drawn off and the boiler left dry. Fresh water boils more readily than dead water which has been lying stagnant, so it is well to fill the boiler with clean water every fall.

The third type of heating plant in general use is the hot-water system. In many ways it resembles the steam plant in appearance; but instead of converting a compara-

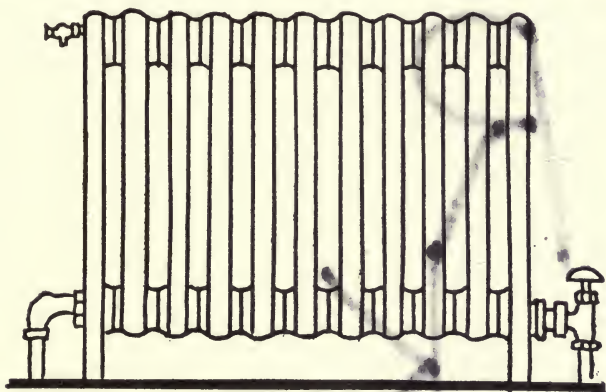
tively small amount of water into steam, the hot-water boiler is filled with water and so are the pipes and radiators. The heat generated in the boiler brings the water up to a temperature of about one hundred and twenty degrees and it naturally starts to rise upwards, and thus forces the cool water in the pipes and radiators down to the boiler where it is reheated. In short you have a natural circulation as long as you have a fire in the boiler. Steam plants usually have but one line of pipe running to the radiators, but hot-water systems have two lines of pipe. One conducts the hot water to the radiators, the other returns the cooler water to the boiler.

It is generally conceded that hot-water plants are economical to operate, because once the water is thoroughly heated, it requires a minimum of fuel to maintain it at the desired temperature. It is also conceded that hot-water heat is even, and not red-hot for a certain length of time and chilly for another, as in the case of a steam heated house. Therefore, if you have a hot-water system you should enjoy great comfort with economy if you take proper care of it.

The cleaning of a hot-water plant is exactly the same as that of a steam job. The flues inside the boiler and the smoke-pipe must be kept free of soot and dust. The next important thing is to see that the system is full of water at all times. You will find an altitude gauge on the top of the boiler showing the height of the water, and this must always show that the system is full up to, and slightly above, the highest radiator. In other words, if the distance

from your basement floor to the radiators on the second floor measures thirty feet, your gauge should show that there is thirty feet of water in the system. It is a good idea to check this weekly, and let in as much water as is required to maintain the level.

Hot water radiators have a habit of not heating up at times. Usually this is caused by the fact that air accu-



Hot-water radiators will have small air-relief valves at the top, which may be opened to release any accumulation of air. This type of radiator should be vented at least once a week.

mulates at the top of them and prevents the hot water from filling them. This is cured in exactly two minutes. At the top of every hot-water radiator you will find a small pet-cock. When this is opened any accumulated air can be relieved. As soon as water starts to run out, close it, because you then know that it is full of water again and the radiator will heat up properly. It is well to do this about every week or two.

When you close down a hot-water plant it should be

done in the same manner as the steam plant, but you should not draw off all the water because it is not necessary. It is true that fresh water boils and steams more rapidly than stale water, but it is also a fact that stale water in a hot-water plant holds a dead heat better than the fresh water.

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Chapter 6

REPAIRS TO THE ELECTRICAL SYSTEM

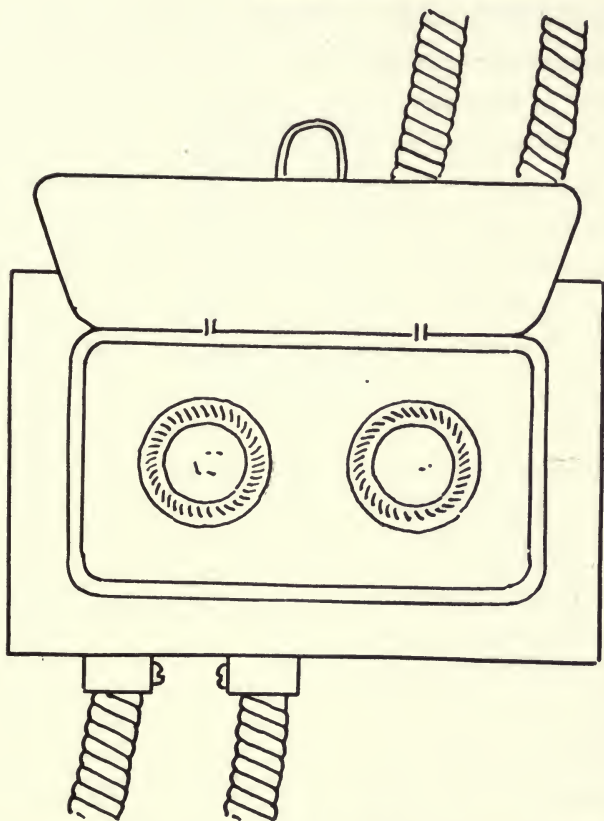
THOSE OF US who live in a modern house seldom realize how very dependent we are on the electrical wiring and equipment until such time as a fuse blows out or the service is interrupted. Flipping a switch and getting a prompt response has become a matter which we take for granted, and probably one homeowner out of ten ever thinks about checking up on this marvelous convenience. Practically all of the modern heating systems rely upon electrical controls of one kind or other; lights, toasters, washing machines and vacuum cleaners are inoperative without it. Therefore it becomes an important item of the household assembly and deserves to be kept in excellent repair.

The electrical system of the average home is very much like the plumbing or the heating systems, but instead of having pipes it has wires through which electric energy flows instead of water or steam. It is likewise a fact that the electrical system is a source of danger to a much greater degree than either of the other two systems. Water or steam trouble make themselves evident in quick order, but danger from short-circuits does not.

The first thing to be done about your electrical system is to be sure that it is a safe one. This is something

that you cannot attend to yourself. For a very few dollars you can have a licensed electrician make a complete test of the system, and guarantee you that it is properly installed, properly fused, and safe. From there on you can attend to matters yourself, but always having in mind the most important fact that it is against the law for homeowners to install their own wiring or fixtures unless they are licensed electricians. It should also be remembered that by so doing you may void your fire-insurance, and should you have a fire which is traced down to some job of home-made electrical work, you will not get a cent from the fire insurance company. Of course we do not mean that you cannot install a new fuse when it is required, or splice a lamp-cord or shorten it; but you very definitely cannot install base-plugs or fixtures, or run wires through walls, or short-circuit fuses. It is so easy to buy insulated wire, plugs, switches and fixtures, and the work seems so simple, that probably fifty percent of the homes in the country have existing violations of the underwriters' laws present in them right at this moment. It is better to be safe than sorry, and we earnestly recommend that any electrical work that is not right out in the open be left to the professional who knows what he is doing.

Every homeowner should be thoroughly acquainted with his fuse box. When the service wire or cable is brought into your house, it is terminated in a steel fuse box. From this cable, the smaller wires to the various rooms of the house are distributed. It is very much like taking a large rope and unraveling it so that you have



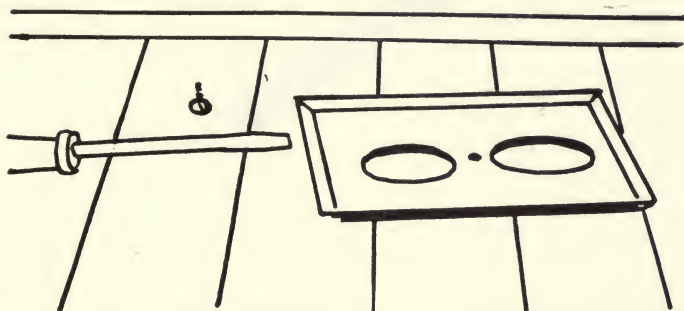
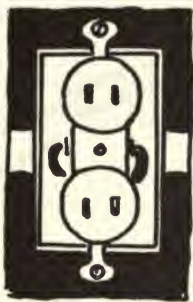
The fuse box is the safety-valve of the house electrical system. Fuses usually blow out from an overload of the circuit. Continued trouble should be investigated.

several small branches. The service wire will have a switch on it, so that when this is pulled all current is cut off from the house. Right here it might be said that no work should be done on the system unless this switch is pulled open. Each of the branch wires will have a fuse in it. These are actually safety-valves, because they cannot carry

an overload of current, and they will blow out before the wires begin to heat up from an overload. Many people get tired of renewing fuses, and put a penny, or a heavy piece of wire called a "jumper" in place of the fuse. This is an exceedingly stupid performance for any intelligent person. The very fact that a fuse keeps blowing out, is a warning that there is something wrong on that circuit, and the intelligent thing to do is to find out about it quickly. It may be that a new piece of equipment has a stiff motor or a motor too large for the circuit, which causes the fuse to blow. Most certainly you don't want the wire to get hot trying to handle it.

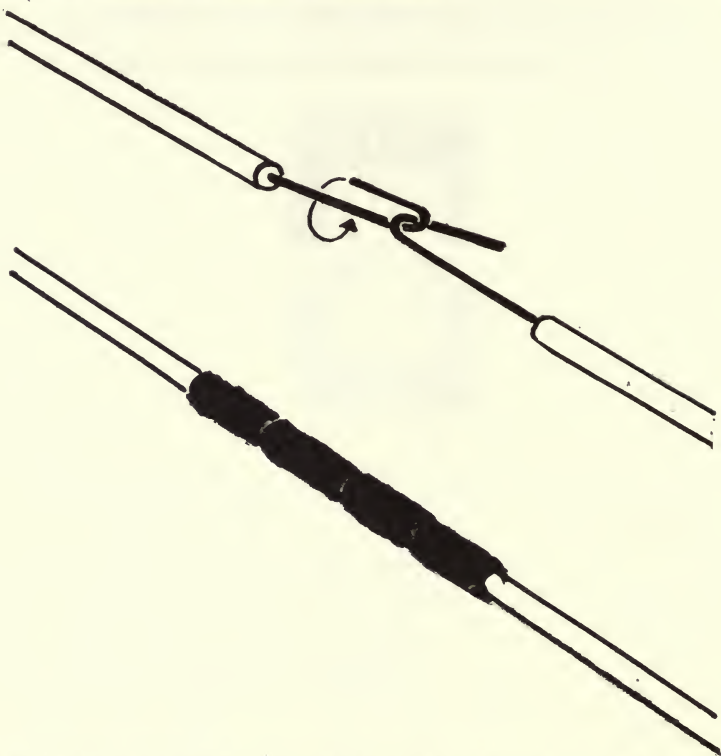
The average fuse-box will have from six to ten fuses or thereabouts. You should know which fuses service which rooms. You can find this out by turning on every light in the house, and removing one fuse at a time, noting which room is affected. Then make a chart, which should be kept near the fuse box, explaining the control. You should always have five or six new fuses on hand, and these should be kept on top of or in the fuse box. The new fuses should be of the same amperage as the ones in use. As a safety measure against shocks, always pull the main switch before replacing a fuse.

After several years of constant inserting and pulling out of plugs, a receptacle in the wall may become loose. Promptly the plate should be removed so that you can see the box, and the screws holding the box to the wall frame should be tightened up. If you neglect the matter, you may need an electrician.



Loose wall or floor-sockets should not be neglected. As soon as a plate or a socket is loose it should be attended to.

Most of the usual run of repair work comes from our habit of jerking plugs out of the sockets by a good tug on the cord. Sooner or later the wires will pull away from the small set-screws which hold them inside the plug, or they will break. The broken wires should be cut off even, turned in a hook under the set-screws, and fastened down. Care should be exercised that no small shred of one wire could contact the other.



Wire splicing should be done carefully and thoroughly. A bad splice may result in blown fuses or in a serious fire.

Splicing wires is a simple matter. The insulation should be removed for two inches and the wire scraped clean. The wires to be spliced together should be bent into a hook, engaged, and twisted tightly. Each should be taped separately to avoid contact, and then taped together into a single strand.

You must never work on a live wire. Be sure that the plug is out of the socket or the switch turned off. You

must never be in contact with any electrical switch, socket, plug, wire or appliance, while you have a hand on a water or steam pipe. It has frequently been fatal.

There is not very much that can be said on the subject of electrical repairs because of the legal restrictions, but it remains a fact that the homeowner can keep the system in good repair by simply using common sense, and learning something each time he is in contact with it. If he does have a lamp bulb which starts to flicker, he should know enough to see whether it is loose in the socket or should be taken out and replaced with a new one. If the vacuum cleaner develops a strange noise, he should know enough to remove the plate covering the blades or fan, and remove the hairpin or other cause of the noise. If the mixer squeaks, he should give it a drop or two of oil, and not wait until the bearings have run themselves rough. Every time he has to rewire a plug, he should study the assembly of it; and when he has to tighten a switch he standing.

Chapter 7

INTERIOR HOUSEHOLD REPAIRS

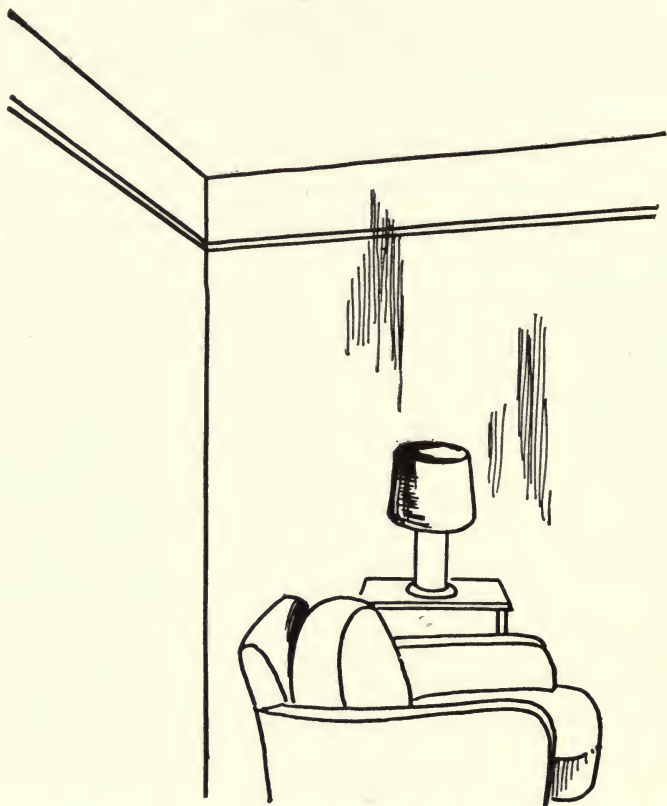
WHEN YOU ARE on the subject of keeping the interior of a house in good repair, you have a tremendous amount of ground to cover. The interior of the average home is composed of many different materials, all kinds of textures, grains and colors, all worked over and installed in place by different kinds of mechanics and tradesmen, any one of whom might be an artist at his own trade but knows nothing about the others. The homeowner who undertakes his own interior repairs and maintenance jobs must learn and acquire a smattering of all trades. He will either make one or two attempts at small odd jobs and give up in disgust, or he will stick to it; master a few of the rules and techniques of the various trades, and get a great kick out of it. Incidentally, the ideas that he is saving a considerable amount of money will not be painful. The old saying that "an expert is a man possessed of a vast amount of ignorance on a great many subjects" is true. The homeowner does not want to be an expert with a finished hand for one task alone. He wants to have a small amount of knowledge about a great many things.

Most house interiors have wood floors, trim, windows and doors. They have plaster walls and ceilings. Most of

the walls are painted or covered with wallpaper, and a few of the floors are covered with linoleum or tile. It is not too much to expect, to be able to learn how to treat these materials once they have been put up or nailed down by an expert. It is being done every day by men and women who had the will to apply themselves, and in many cases it has developed into an interesting hobby. It has been proved beyond question, that any intelligent adult can handle his own interior repair work with ease, once he has been shown the right way in which to tackle it.

There are two reasons for keeping the interior of a house in good repair. The first is to make it pleasant to the eye, and the second is to make it comfortable. If you accomplish both of these things, you are doing a lot, and at the same time you will probably go a long way toward making the house safe to live in as well.

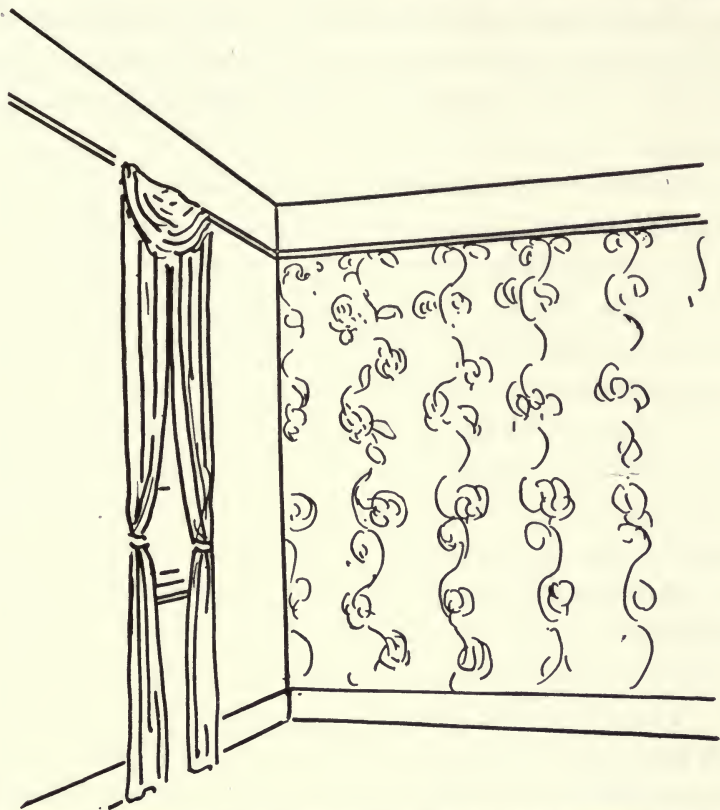
The first thing you notice when you enter a house is the condition of the walls and ceilings. If there is a gaping seam in the wallpaper, or one corner of it peeling off, it strikes your eye at once. You also think to yourself, that it seems a small thing to let go that way. If there is a large stain on the wall, you wonder why the owner has not done something about it. If there is a badly cracked ceiling, or a discolored ceiling, you promptly feel that the house is owned by careless or disinterested people, who are obviously content to live in any kind of surroundings. Other people notice exactly the same defects in your house when they enter it. You do not notice these small things about your own home for the simple rea-



Stained walls and spotted ceilings can ruin the appearance of a well furnished room. The walls are the most important items of any enclosed area because they attract the most attention.

son that you are used to them, and they no longer register with you. A combination of shoddy walls and ceilings, plus badly scuffed floors that creak as you walk across them, is enough to convey a general air of dilapidation in any house.

Wallpaper can be glued back in place in a few min-



Modern decorating practice does not insist upon all four walls being done in the same manner or with the same covering. Highly decorative effects have been achieved by contrasting treatment.

utes. The procedure is to dampen the paper and the wall behind it with a wet sponge. We really mean dampen it—not soak it. Then apply a light coat of any good glue to the wall only, and press the paper back in place by balling up a clean cloth and using it to iron the paper out. Always iron the paper away from the center, and

toward the seam which has opened or the corner which has peeled. In other words always wipe toward an edge or corner, never toward the paper which has remained in place.

Wallpaper that is badly stained can seldom be cleaned properly unless it is the washable type, and even then you are liable to fade out the color. One of the best ideas is to paste a new strip of the same paper immediately over the stain. If you match the design carefully it will be practically impossible to see where the patch is made.

A year or two ago, interior decorators came out with the novel idea of papering one or two walls of a room, and painting the others. At first it appeared to be rather an odd idea, but gradually it took hold, and now you see many rooms done with contrasting walls. This opens endless possibilities for the homeowner with one or two walls in bad condition.

There are other ideas as well, where only one wall is in bad shape. Not long ago we saw a particularly clever one. A well known doctor had a very fine living room in his country house, and the walls were covered with an imported tapestry wallpaper. During the winter, a leak developed in the chimney and caused a large rust-colored stain over the mantel-piece, which completely ruined the paper. He found it impossible to get any more wall covering of the same color and pattern, and it looked as though he was in for a complete job of redecorating. However, a neighbor made a very smart suggestion, which was carried out. A sheet of mahogany veneered plywood,

of sufficient size to completely cover the wall above the fireplace, was nailed over the mantel and framed with a fine beaded molding. The result was excellent, as it not only saved an expensive job of repapering, but actually improved the appearance of the room as well. Plywood and molding cost six dollars.

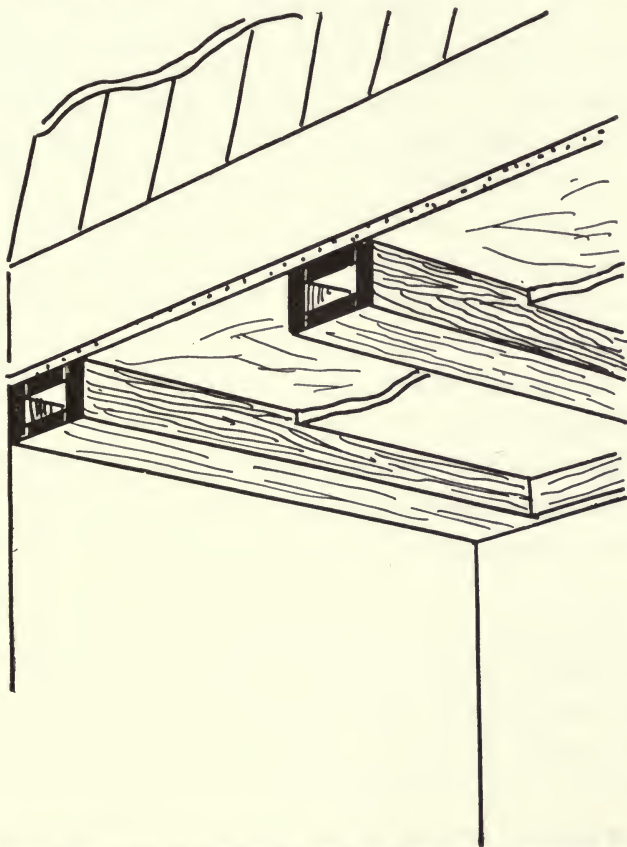
These incidents are cited simply to impress upon the reader that ingenuity and close study of his problems are bound to bring solutions. Never get in a panic over interior repair work on walls, ceilings or floors. Take your time about them. Study them out. Look all around for suggestions and smart ideas, and profit by what others have accomplished.

Cracks in the plaster of walls and ceilings are easily taken care of if you will go about the job properly. Every hardware store in the country sells prepared plaster to which you simply add water, and it is ready for use; but before using it you have some preparation work to do. In the first place, you must cut out the crack so that it is about $\frac{1}{4}$ to $\frac{1}{2}$ inch wide. Then you must brush it out so that it is entirely free of dust or loose particles. Next and most important, you must wet the edges of the crack thoroughly. Then you are ready to trowel in the prepared mixture and strike it off even with the surface on both sides of the crack. Most of the plaster repair jobs done by homeowners fail to work out properly because they do not wet the edges. Old plaster is as dry and absorbent as blotting paper, and when you trowel in the new mix, it sucks every bit of moisture out of it unless

you first let it have all it wants. Robbed of its moisture content, the new mix will never bond with the old plaster. When you use prepared plaster for patching jobs, always allow at least three days for drying before you attempt to paint or paper over it. If the weather has been damp or cold, allow at least a week. After that time, if it does not appear to be perfectly dry, give it one light coat of shellac.

Ceilings have always been troublesome to homeowners, and as most of us know, the repairs to them run into real money. Many times a ceiling has been patched and patched, and often, almost entirely rebuilt without definitely good results. However, in these days there is an easy remedy for most ceiling trouble. If you have a bad condition which indicates that the old plaster work is about done for, the best and most economical thing to do is to recover it at once with a good substantial composition board. It will not be necessary to take down the old plaster. These boards are made by several reputable manufacturers, who also give complete directions for applying them. They come in large sheets but are not too heavy to handle. The best procedure is to measure your floor area (which is exactly the same as the ceiling) and make a rough sketch of it. Then go to your local lumber yard and see what size board is on hand. By very elementary arithmetic, you can figure out how many boards, so long and so wide, you will need, and how you will cut them to cover the ceiling completely. The actual applying of the board must be done so that you nail right through

the plaster and into the beams above the old plaster. You can locate these by driving a long thin wire nail, and once you have located one of them, you can count on



A beamed-ceiling can be made the answer to the problem of continued ceiling trouble in any particular room. The work is not too complicated for the average amateur carpenter to undertake.

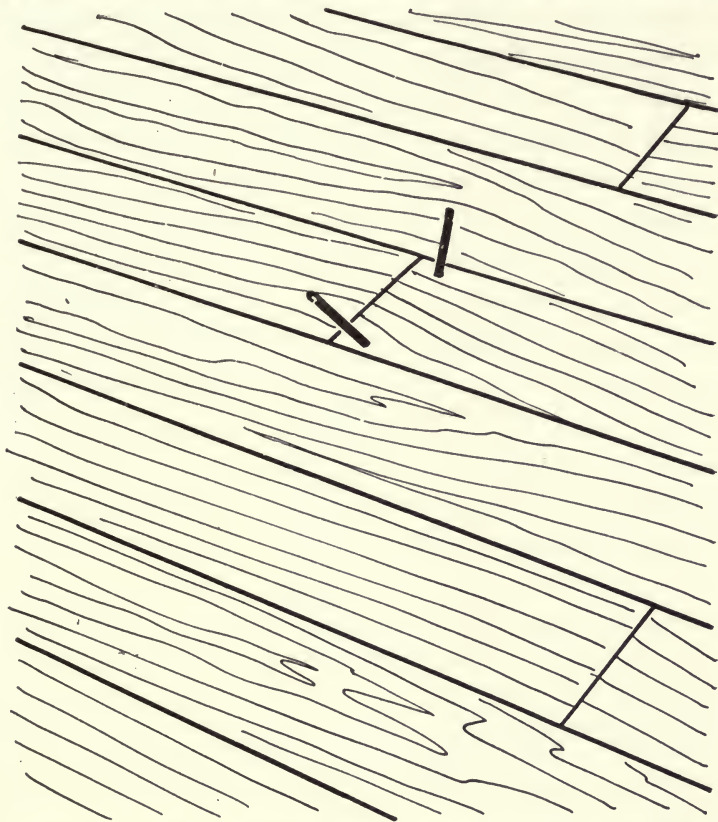
another being sixteen inches to either side. The joints where the boards meet can be covered with narrow wood strip, or with special tape which is glued over the joints.

There is still another method of taking care of a bad ceiling, and it consists of converting it into a beamed ceiling. This may sound like a tremendous undertaking but actually it is nothing of the kind. The job consists simply of nailing one-by-three or one-by-four wood strips across the ceiling at correctly spaced intervals. These must be spiked solidly up through the plaster into the beams above. You then make plain wooden troughs of the same size strip and set them up against the ceiling so that their sides slip up past the edges of the ceiling strips. You then nail them into the ceiling strip edges. This job requires nothing whatever except careful measuring and plain cross-cut sawing. When it is finished you have a splendid looking ceiling, and one that is there to stay. You should arrange to have the beams run across the ceiling the short way. In other words, if your room is twelve by twenty feet, run the beams the twelve foot way.

The floors of the average house are made of wood strip which is tongued and grooved so that the edge of one strip locks into the edge of the adjacent strip. It is commonly called "flooring" and comes in oak, maple and pine woods. The oak and maple are the superior floorings. In the chapter on painting, we have given directions for refinishing floors. The following has to do with repairing them.

All decent wood floors are composed of two layers, with a sheet of either felt or building paper between them. The first layer is called the "rough floor" or "sub-floor"

and is made of rough planks nailed into the floor beams. The floor you actually walk on is the "finished floor" or top layer. As wood is bound to shrink with age, the nails



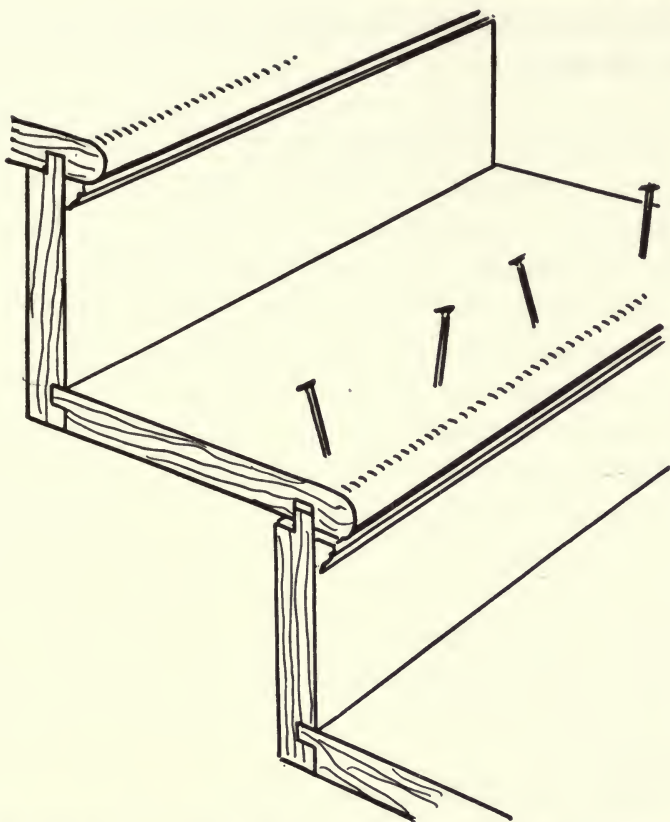
Creaking floors may be tightened up and silenced by toeing-in nails at an angle as illustrated. As a rule the creak develops from loose board-ends where the butts rub together under a load.

which attach the finished floor to the rough floor often become loosened, with the result that when you walk across the floor it squeaks. Invariably you will find that

the squeaking comes not from the edge of the strips, but where the end of one strip joins another and where they are nailed. There is no use in sinking the old nails further into the floor to cure this. The remedy lies in driving new nails in the ends at an angle, so that they are "toed." In other words drive them at a forty-five degree angle, and not straight up and down. You can go over a floor, testing it with your weight until you hear the creaking, and nail at that point. You should use two-inch small-head wire nails, and drive them slightly below the surface. When the flooring was not well seasoned in the first place, the strips may shrink enough to leave quite a wide crack between them. This can be filled by using a paste called a "filler." It should be troweled over the crack with a putty-knife, and the excess scraped off immediately. It should be allowed to set for three or four days before the floor is shellacked or varnished.

Stairs frequently suffer from the same complaints as the floors, namely, the wood of which they are made shrinks with age, and the stairs creak and groan under ordinary use. Stairs are complicated things. They are not only nailed together, but they are also glued, dovetailed, mortised and wedged.

When you walk up a stair, the surface you step on is the "tread," the flat vertical surfaces separating the treads are the "risers." Most of the creaking developed in a stair is caused by loosening of the joint where the edge of the tread is fastened to the top of the riser. This can be cured



The average noisy staircase will quiet down when the treads are more firmly secured to the top edge of the risers as shown.

by toeing in wire nails down through the tread so that they sink into the riser. Each tread should receive five nails, driven in at opposing angles.

If the hand rail is loose, it can easily be seen where the trouble lies, and one or two long nails should secure it properly. If the balusters seem loose, they can be firmed

up with two angle-driven nails at the bottom and two under the rail.

The doors in any house are apt to cause trouble at times. As a rule this is caused by a slight settling of the house which warps the door-frame out of a perfect rectangle. Fortunately, there will always be rub marks to show just where they bind, and a slight sand-papering will be enough to ease them up. (Note that when you are using sandpaper, it is twice as effective if you wrap it around a block of wood.) If the rub should be at the top or bottom instead of at the sides, you may have to take the door down. There is nothing particularly hard about this, as the average door has two hinges, each with three or four screws in it, and you simply take out the screws and the door will come out of the frame. If quite a lot has to be taken off the top or bottom edge of the door, you can use a medium-coarse file first, and follow that up with the sand-papering.

A door that will not stay closed when you shut it can be a very annoying thing. The usual cause of this, is that the small tongue of the lock fails to slip into the square hole in the striking-plate on the door-jamb. If you will bend down and watch the tongue slide over the striking-plate as you close the door slowly, you can see by just how much it misses the square hole, and whether the striking-plate has to be moved up or down, forward or back. As a rule it will only need to be shifted a fraction of an inch one way or the other. Nine times out of ten,

you will be able to set the edge of a screw-driver against the edge of the plate and tap it far enough in the right direction. As the plates are always set into the jamb, you will not have much leeway, and you may have to reset the plate.

On rare occasions you may find that a door will not stay closed because the tongue is too far away from the striking-plate. This may be caused by the door shrinking or the door-frame spreading. The cure for this is very elementary. You unscrew the hinges and place one or more thicknesses of cardboard behind the leaf of the hinge that is fastened to the door-frame. Then you fasten the hinges in place again. What you have done is simply to move the door over closer to the striking-plate.

Most houses develop window trouble every once-in-awhile. Usually it consists of a window which will not open because the sash has warped or because the house has settled enough to jam it. The first thing to know about windows, is that you should not try to pry or jimmy them open from the inside. If you do, you will mar the wood-work and have a job of evening-off and painting the window sill. Windows that are stuck should be opened from the outside, where you can get a wedge or a chisel under the sash. Before you commence the prying-up, grease the runners between which the sash slides, with an application of ordinary vaseline. It is the best window lubricant in the world, and many know-how homeowners take a small brush and paint a little vaseline on the casing and parting-

strips of the windows every year. If the above remedy will not make the window operative, you will have to resort to scraping the grooves out with coarse sand-paper until the window will slide easily.

Many bathrooms are tiled, and many owners of tiled bathrooms know how badly they look when a tile falls out of the wall. At the same time, it is quite expensive to call in a tile-setter for such a small job. Ordinary gluing or pasting will not keep a tile in place; it must be set in plaster-of-paris. The correct procedure is to chip off every bit of old plaster from the back of the tile, and place it in water. The space out of which the tile fell must also be thoroughly cleaned out. You then mix a cupful of plaster-of-paris with enough water to make a very thick paste; not soupy; really thick. You put two gobs of the paste, about the size of a silver dollar and a half-inch thick, on the wall, and then shaking the water off the tile, you press it back in place and hold it there for about five minutes. Plaster-of-paris sets up very rapidly, and in five minutes the tile will be in place for good. You then mix up a small amount and fill the seams around the edges of the tile. You have to work fast, and wipe all excess plaster off the face of the tile before it sets.

The same procedure is followed for loose tiles in bathroom floors, or for the tiles in front of fireplaces. Where color is involved, you will have to touch up the white plaster to match the surroundings.

You frequently see a perfectly good linoleum floor that is slowly going bad because the edge near a doorway

is being broken away bit by bit. The wrong thing to do is to keep on tacking or nailing it down. When linoleum starts to break, you either have to make a clean cut and insert a new piece, which you cement securely to the floor, or you have to put on a metal edge. Metal edging is the best job of the two. It can be bought in any hardware or linoleum store, and all you have to do is to take an accurate measurement, and then screw the edging into place. When the seams in a linoleum floor open, you should not nail them. You should slip linoleum cement under the edges, using a thin knife-blade, and then press it down, and leave a heavy weight on the area for a day and a night. A flat piece of board with a pailful of water on top of it, makes an ideal weight.

Chapter 8

PAINTING

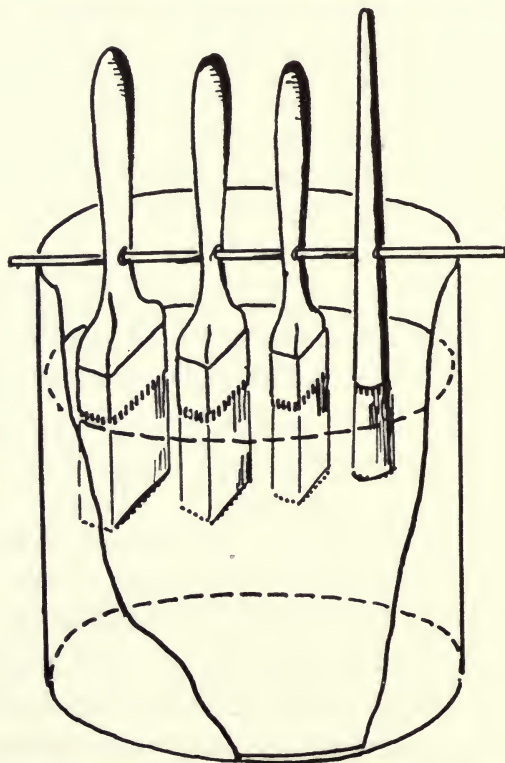
ANYTHING that might be said about painting should be prefaced with the statement that over seven hundred million dollars' worth of paint and varnish are bought in this country in the course of a year, and the greater part of it is used on the interiors of buildings. It should be added, that fully a third of the paint which is bought for use by homebuilders or homebuyers is not properly applied; and it should be further added that more than one-half of the brushes bought by homeowners are ruined by mistreatment, and rendered useless. All of which brings us around to the point; that if you want to do any painting, and want to have a few good brushes, ready for use at any time, it would be well to study up on paint and brush handling.

Spring and early Summer are the times during which the local hardware and paint-store proprietors rub their hands in glee, because they know that during those periods the average homeowner comes in to buy pints, quarts, and gallons of paint, and three or four different kinds and sizes of brushes. They also know that the same operation will be followed next year, and that half of the brushes sold will be as hard as a rock a week after they are pur-

chased. You cannot blame any purveyor of paints or brushes, because every manufacturer of good paint has broadcast the correct method of applying his product, and has spent a fortune on literature which gives the proper procedure. The large manufacturers of brushes have also tried to tell the public how to handle brushes, so as to get the most out of their investment, but it seems to be an impossible task. It is a pity, because a good brush will last for a life-time and become better with use; and good paint can be used right down to the last fraction of an ounce. If the owner of a house is really interested in economy, and in doing his own painting, he might well start with a thorough indoctrination in the proper handling of both paint and brushes.

We will start with the correct handling and treatment of brushes. The average homeowner should have a 2", a 3" and a 4" brush, plus a 1" sash-tool. The 2" brush is for fine work around moldings, window-panes and other narrow surfaces. The 3" brush is for heavier work such as door-frames, window-frames and panels. The 4" brush is for large surfaces or areas where you have to cover a lot of ground. The sash-tool is not a tool at all, but a brush with a round handle and short bristles, and is usually used for painting the cross-bars of windows (technically known as the muntins and stiles) and for other places where a wider brush would be awkward to handle. When you have this equipment you have all the necessary tools that are worth any money, and should add a putty-knife and several sheets of assorted sand-paper.

As soon as you are through using a brush, you should work it out on a board or a piece of newspaper and then place it in a can of turpentine or linseed oil. You should "hang" the brush, by making a hole in the handle, and suspending it in the can instead of allowing it to lie on the bottom. By doing this, you keep the bristles from taking on a curve. Brushes which are used for white, light gray, light yellow, or other corresponding colors can be



When brushes are hung in solvent while not in use, they are not liable to acquire curved bristles or gum at the ends. A good brush is a very valuable tool for the homeowner, and should be treated accordingly.

safely kept in the same can. Brushes that are used for blacks, dark greys, etc., should have separate cans, and all reds belong by themselves. If you have plenty of receptacles, it is better to thoroughly segregate all colors. If you really get into the painting business, you will probably work out your own system, but the main object is to keep the brushes soft, and ready for the next job. The more you pay for a brush (and the prices are usually honest) the better you will do. All professional painters prize their brushes as a surgeon does his scalpels, and treats them with corresponding respect. Keep a good brush clean, soft, and workable, and you have a tool which it is honestly a pleasure to work with. Have a brush that is semi-hard, bristling, and rough; and you have a tool that will disgust you with your work.

When it comes to painting, either outdoors or indoors, there is one basic rule. The surface you want to paint must be dry, clean, and smooth. When you are sure of these points, you are already half-way to a decent job.

Exterior painting is entirely different from interior work. When you paint the outside of a house you have two things in mind; the first is weather resistance, and architectural effect or color. When you paint interiors, your main object is decorative effect; except perhaps in the kitchen and bathroom, where some degree of moisture resistance is desirable.

To prepare an exterior surface for painting, you must scrape off all loose paint, boils, alligating and dirt. As a matter of fact, many houses that appeared to need a coat



*Painting over an unprepared surface is a waste of both time and materials.
Loose paint must be removed and cracks filled.*

of paint, actually only needed a good scrubbing with soap and water. Any good painting contractor will invariably wash a house exterior before he starts to paint it; and in many cases will decide that it only requires one freshening coat instead of a complete job.

The best time to paint is in the spring; when the sun is warm, the nights not freezing, and before gnats and other insect life are on hand to spot the new paint. At



Filling should be thorough, and done right down to the slightest crack that is evident. The filling compound should be forced in with a putty-knife or caulking tool and not merely scraped over the surface of the crack.

least three days of clear, dry weather should precede a painting operation. If you are lucky enough to pick out a good windless day at the same time, you are doubly fortunate.

After the exterior has been thoroughly scraped and prepared, you should go over the surface for open cracks and joints. These should be filled with good linseed-oil putty or caulking compound. Small cracks and fissures can be disregarded, because the paint will fill them, but

anything over an eighth of an inch deserves filling. Have in mind the fact that you are painting the exterior first as a matter of preserving it, and secondly to make it look better. Real preservation means protection against the weather. Never apply a second coat of paint until you are sure that the first coat has dried; and then wait for another day. A coat of paint over a semi-dried coat is absolutely useless.

Interior painting is something that can be done leisurely and without any worry about outside influences. As a rule it consists of floor-finishing, trim-painting, wall-papering and enameling. At the very beginning, it should be noted that there is so much advice and so many good suggestions available to the homeowner through the good magazines and from the various manufacturers of paint and varnishes, that there is no excuse for anyone failing to get a good color scheme or to do a neat job. All interior painting hinges on having a clean, dry surface to work on, and having the right quality of paint, varnish or enamel to work with. It is very easy to wash an interior surface by giving it a good rubbing with warm water and soap-suds, and then rinsing it off with clear warm water. We do not recommend the use of any strong solutions or compounds, because when they are strong enough to eat the dirt or grime off the woodwork, they are also strong enough to attack the paint.

You often see a paint job that is completely spoiled by the fact that the old coat of paint had been chipped off in places, and left a depression on the surface which

the new coat did not fill out. You can avoid this sort of thing by using fine sandpaper and taking down the edges of the depression. When you do this, the new coat will have a good even appearance.



Interior woodwork should be stripped before it is painted. All nails, hooks or brackets should be removed, and then the wood should be washed, dried and sanded lightly.

Among the things to remember about interior painting is the fact that paint, enamel or varnish does not take as readily to smooth, glassy surfaces as they do to rough or semi-rough surfaces. If you will give the woodwork

a light roughening up with sandpaper before you paint it, it will help to give the new coat a grip.

Mixing paint or enamel is extremely simple. There is hardly a can of paint sold which does not have the directions for mixing printed on it. The main trouble is that the average person thinks that they know more about it than the man who made the paint, and insist on adding thinners or driers according to their own misconceived ideas. You can depend upon it, that you will get a better job, and more satisfaction if you do as you are told. Prepared paint is ready for use as you buy it. Read the directions, follow them, and you will be doing things properly. As a general thing, when you open a can of paint, you should have an empty can at hand, and pour about half of the contents of the new can into it. Stir the remainder in the new can thoroughly, and then gradually add the paint which you poured off. If the directions say to add one tablespoon of turpentine, add one spoonful, and not two. If the directions say to apply a coat of flat white before applying an enamel, do it. In short, give the manufacturers of the product credit for knowing what they are talking about.

Floors are usually covered with shellac or varnish. When you want to refinish a floor, you have two procedures open to you. You can rent a sandpapering machine by the hour, and take off the old finish, or you scrub the floor by hand with alcohol and steel wool. The first procedure is modern, and makes a good, clean, fast job; the second one is the old-fashioned method, but still popu-

lar with many painters. A coat of shellac will dry in about fifteen minutes, a coat of varnish requires a full day at least unless it is quick-drying. When the floor has been cleaned of the old coat, you should go over it for stains



Floors may be prepared for re-shellacking or varnishing by first scrubbing them with steel wool and denatured alcohol. High edges or ends should be scraped down even with the surrounding surface.

and spots. As a rule you can remove ink stains with a bleach or by scraping with a piece of broken glass. Hot grease or penetrating oil stains require a bleaching. You should also go over the surface for any nail-heads which are showing, and drive them back where they belong. You should fill any unsightly cracks with a filling paste.

When you visit your local paint store, ask the pro-

prietor for his advice about any job that you have in mind. New products and procedures are coming on the market every day, and you will find that he knows all about them. Take advantage of his long experience and benefit by what he can tell you.

One final bit of advice on painting is this: do not at first attempt big jobs involving large surfaces or complications. Be content at first to try your hand at small painting jobs, and as your technique improves and you become familiar with the procedures, you can go further.

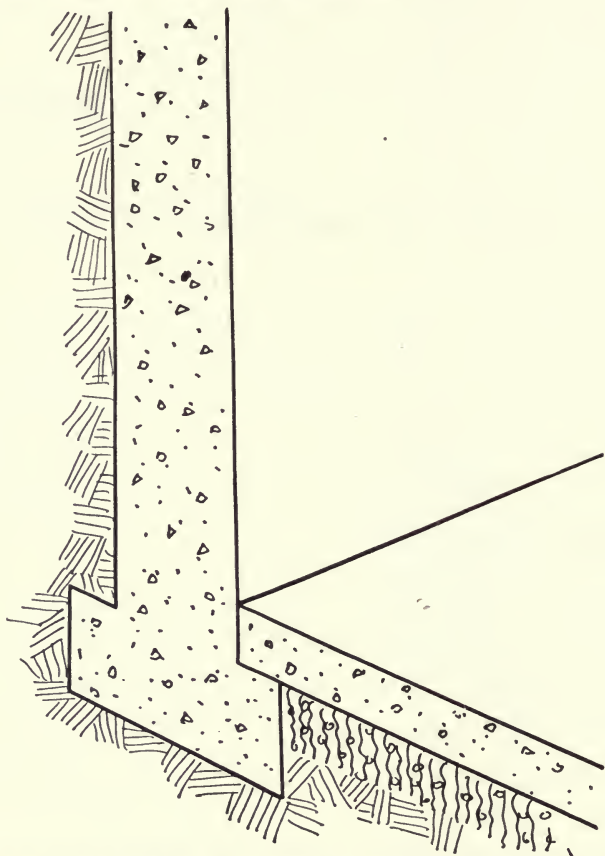
Chapter 9

CONCRETE AND MASONRY REPAIRS

WHEN WE SPEAK of concrete and masonry repairs, we are referring to those parts of the house which are constructed of brick, stone, cement block, tile and all cementitious products. As a rule, basement and cellar floors will be made of concrete. The walls will be made of cement block, brick or poured concrete, and very often the steps and terraces are made of masonry materials.

Masonry does not have the ability to expand and contract to any great degree without cracking, or fracturing, and you will often see brick steps which are badly broken up and loosened, because water has gotten beneath them, frozen, and forced the bricks apart. You will also see cracks in a basement floor which are caused by slight settling of the walls or by the washing-out of the fill underneath the floor. We will take all of the concrete and masonry portions of the house, one at a time, and try to explain exactly how they should be kept in repair and how the repair can be most easily done by the homeowner.

The basement floor of a house is usually made by laying several inches of cinders or crushed stone and rolling them down hard. A coat of concrete, from 2 to 3 inches thick, is then spread over the bed and troweled to



*The joint where basement floor meets foundation walls is liable to leak.
This can be cured by filling it with a cement paste.*

a finish. Cracks in a basement floor which admit water into the basement, are usually found where the floor meets the basement walls. One of the best remedies for this condition is to mix a small amount of cement and sand in proportion of two of sand to one of cement, making the mix about the consistency of pea soup; wet the cracks

very thoroughly; allow them to dry so that there is no free water standing in the crack; then brush in the mixture. The crack should be cemented to the very top and then smoothed off.

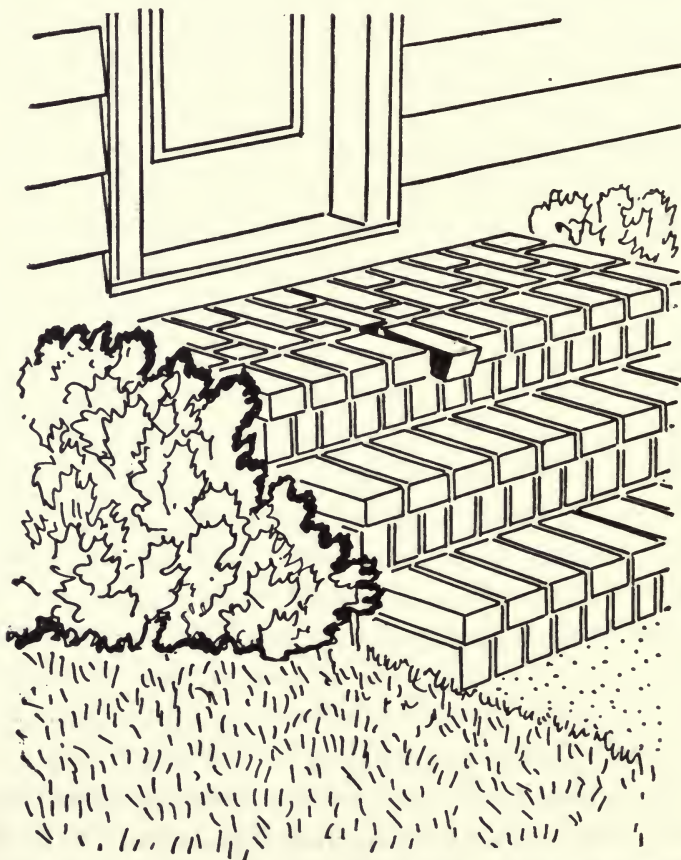
Frequently we see cracks running right across the basement floor. This may be caused by expansion and contraction or it may be caused by a slight settlement of the foundation walls. The best remedy for this condition is to brush out the crack so that all loose particles are removed, wet the crack thoroughly, and trowel in a mixture of prepared concrete patching material which can be found in almost any hardware or building supply store.

On some occasions a section of the floor will break up into several pieces and sink below a level of the rest of the surface. This is always caused by the settling or washing out of the fill under the floor and there is only one remedy for it. With a heavy sledge or maul, the floor should be broken up and the pieces of concrete flooring removed. The breaking-up should continue until you can see that the edge of the hole is over solid fill. Damp sand should be thrown in and tamped down solidly until the fill is even with the surrounding edge. Then fresh concrete, composed of a mixture of one of cement, two of sand, and three of crushed stone, should be thrown in, tamped and floated to a finish corresponding with the firm edges.

The above operation, however, does not quite finish this job. The fresh concrete should be covered with old burlap bags or an old blanket, and this should be kept dampened for at least five days before it is removed. At

the end of that time the patch will have set up hard and be ready to walk on without any danger of fracture.

Cracks in brick basement or cellar walls should be treated in exactly the same manner as recommended for the treatment of exterior brick walls. In other words, all



If one brick is permitted to remain loose, the bricks on either side will follow suit rapidly. All bricks must be kept solidly in place if you want to avoid complete disintegration.

loose mortar cracks should be cut out, the brick well dampened and fresh mortar trowelled in.

Cracks in cement blocks should be treated in exactly the same way, taking great care that the dry area around the new joint has been well wetted before forcing in the new mixture.

Repairs to brick steps or terraces must necessarily be done with great care, because when you are making a repair to a wall it is simply standing there and is not subject to contusions as are brick steps or platforms. Practically everyone who has lived in a house has seen heavy trunks or crates dumped on the brick steps with very bad effect. When a brick has been loosened there is only one proper way in which to treat it and that is to lift it out entirely. Take a very sharp cold chisel and a hammer and chip off all of the old bonding material. This should not only be taken off the brick that has been removed, but it must also be taken off the edges of the adjacent bricks and out of the space from which the brick has been removed. All surrounding surfaces must then be wet, a fresh bed of cement laid and the brick reset in place so that edges and surface match up with the adjoining area. Then the joint should be trowelled to correspond with the other work and the repair kept covered with damp cloths for five days. It should be noted, that to step on a freshly set brick before that length of time, will loosen it and make the job worthless. It should also be noted that in repairing steps, platforms, or terraces, that cement and sand mix should be used instead of mortar.

All amateur masons should remember the necessity of trying to "key-in" mortar or cement joints. It should be perfectly obvious to anyone that if you have a crack in a wall or floor, and the exposed space is wider than the inside portion of the crack, that providing the bond is not very good, the fill is liable to fall out of, or be forced out of the crack. On the other hand, if you manage to make a key by having the inside portion larger than the wide surface, nothing can ever force the fill out of that crack. It will have to be chiselled out.

While it does not come directly under the heading of Masonry and Repairs, something should be said at this point about discoloration of brickwork. You often see a good-looking brick house, the walls of which are badly discolored with patches of a white salty-looking stain. This is known as effluorescence and is brought about by the fact that soluble salts which are found in cement and mortar are dissolved by dampness and work to the surface, where they dry and thus show the salt-like patch. A sure cure for this is to wash off the wall with a mixture of water and tri-sodium phosphate. It is best to do this after the wall has been dry for several days. If patches of effluorescence continue to appear after this treatment, it will be necessary to clean the wall as above and then, in addition, give it a coat of penetrating, colorless waterproofing compound. This is an amber-colored emulsion which will sink into the pores of the brick and seal them so that no further effluorescence can work to the surface.

The average person will undertake to cut a board in

half or to paint a door, but they will invariably shy away from anything that involves brick-work, concrete or masonry, because they think that it involves a lot of knowledge and considerable skill. Nothing could be farther from the truth. All masonry work consists simply of the ability to bond together bricks or stones with mortar or cement, or to pour concrete into a mold and level it off. We naturally are not referring to the building of arches or of intricate brick work, or to the building of forms for heavy structural jobs. We refer simply to the every-day patching and repairing of masonry as it may be encountered in the average small home.

When there is a loose brick, a crack in a concrete wall, an open fissure in a cement floor, or a leaking joint in a stone wall, we insist that the average homeowner can take care of the difficulty if he will just study the defect, remember what he has been told, and take his time in making the repair.

Always remember that dry masonry is absorbent, and that no repair will be worthwhile unless the area around the patch or the new work has been wetted.

Around every house, there are probably a dozen places where a clean-cut job of masonry could be done which would eliminate repeated repairs to woodwork. There are many porch steps, many back-entrances and many wood platforms which could well be replaced by a neat mat of concrete. There is nothing which would prevent a homeowner from making a simple wooden form, three inches high, at the bottom of his steps, and filling

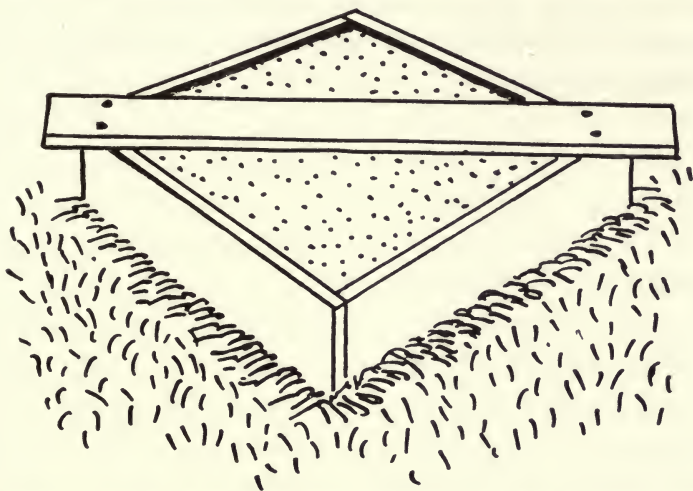
it with concrete so that he had a permanent landing. There is nothing so complicated about setting up a form composed of three or four steps, which he could fill with concrete, and thus have a permanent set of steps. As a matter of fact, if he were to remove the treads, he would already have a form ready to fill with very little alteration. He might have to allow for a change in levels of course, but beyond that there would be little to worry about.

There is a permanence about cement and masonry work which is very satisfying. We have seen people start by laying a patch of cement under the down-spouts from the roof, where they emptied on the lawn, and cut away the grass; and who ended up by making wood forms with which they edged their driveway and paths, and so produced a permanent labor-saving edge. We have also seen field stone walls erected by amateur mechanics, which were as good as any to be found in New England. It may be true that when they finished a fifty or sixty foot run, that they liked the last half of the wall so well that they went back and tore down the first half, but the net result was a good workmanlike job which will stand up.

There is nothing about masonry or concrete repair work that should bother anyone of average intelligence, and there is always the saving thought that if it does not work out, you can do it over again. If you adhere to the formulas for mixing which have been given, and follow the procedures recommended, you cannot help but produce at least a decent repair job. There is also the thought, that practice makes perfect; and it applies particularly

to masonry. With every job you attempt, your technique will improve.

The present trend toward living in the country has created quite a demand for many of the small advantages which are not found in the ready built house, and there is no place where home-made jobs of concrete could be used to better advantage. As an example of what the home-



Forms for concrete flags, bases, steps or platforms are easy to construct and fill. Forms should be braced to avoid distortion.

owner can do for himself and his house we would suggest the following.

Take a piece of three by one inch finishing strip, and cut it up into four sections, each one two feet long. Nail these together so as to form a square box without either top or bottom; and tack another piece across the top diagonally so as to prevent the box from warping out of

square. Mix up a batch of concrete using three parts of crushed stone or gravel, two parts of sand and one part of portland cement. With just enough water to make a good stiff mixture. Fill the form and allow it to set for five days. At the end of that time you can knock off the form and you will have a heavy concrete unit which may be used to advantage as a base for a sun-dial or other lawn ornaments. If you manage to get through this simple operation, you will be well under way to knowing how to handle concrete.

Chapter 10

THE CARE AND REPAIR OF AUXILIARY EQUIPMENT

ALL HOUSES have what is called equipment. The permanent equipment consists of bathroom and kitchen fixtures, lighting fixtures, heating plants and other basic installations. Auxiliary equipment consists of vacuum-cleaners, irons, mangles, lamps, toasters, and everything else which renders a distinct service, with the exception of the actual furniture. Right here it might be said, that the amount of money that the average family has invested in auxiliary equipment of one kind or another is absolutely astounding, because aside from the mechanical equipment mentioned above, there are also such items as storm-sash, screens, storm-vestibules and other appurtenances which are basically auxiliary equipment.

Starting with the so-called structure equipment such as the storm-sash and screens, it might be said that any advice which suggests that it has to be handled with great care and consideration is a bit out of line. All that you have to do about storm-sash is to see that the glass is not broken, and that the wood frames are painted every three or four years. If the putty around the glass breaks out, it is surely easy enough for any grown man or woman

to replace it without need for close or detailed instructions. It seems to us that the procedure for this particular job has been thoroughly explained in every weekly,



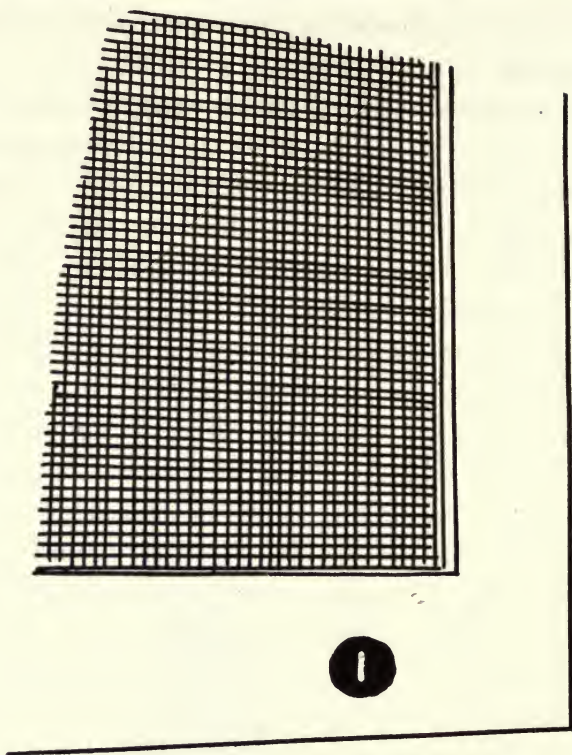
Storm-sash and screens are kept in good condition by proper painting, and by seeing that hangers and fasteners are firm.

monthly and semi-yearly magazine published. However, if you have missed it, the job consists of making a roll of putty, placing it in the space left by the missing putty,

and smoothing it off with a putty knife to match the remaining bead.

Screens require even less attention for the reason that they are less apt to be broken. Naturally the frames should be kept in good shape by proper painting, and the hangers should be kept in true line so that the screens fit into place. Providing that the screening should be broken, it is quite easy to replace it. The main thing about applying new screening is to remove the molding which covers the edge, tack the new mesh at the top of the frame first, and stretch the screening tight. Then, without cutting it, tack the bottom edge and the sides and replace the molding. Then cut away the excess at bottom and sides. A sharp knife will do this job excellently. The average person makes the mistake of taking careful measurements, allowing for the necessary tacking-edge, cutting a square of mesh, and then nailing it in place. As a rule this results in a bulging surface, because there is no excess at the bottom to stretch with. After you have re-screened one or two frames, you will have the technique well in hand.

All suburbanites know that taking down and putting up either screens or storm-sash is a nuisance and a hard job. Most of them go through a "fitting-job" every spring and fall, in order to find out which sash or screen belongs in which window frame. This can all be done away with forever by buying a set of duplicate numbered buttons (which resemble thumb-tacks) and tacking one to the frame and one to the right sash or screen. If you will invest a dollar or two, and attach the properly numbered



Small numbered buttons on the frame of screens and sash will obviate any guess-work when they are being installed.

button to the screens and sash before you remove them, you will reduce a half-day job to an hour's work.

When you take storm sash down, and are ready to store it for the summer, we would advise that it be hosed off and then stacked or nested on the side. In other words, stand it lengthwise, not up and down as it was when it was in the window frame. If you have a large piece of canvas, or a large old sheet, cover the sash with it so that

it will not accumulate a lot of dust during the coming months. We recommend that sash be stored or racked on the side, because glass will break twice as easily when the surface is laid flat as when it is laid on edge.

When you are ready to store or stack screens, you should give them a good brushing with an ordinary whisk-broom so as to thoroughly clean the mesh. Next you should wash them and allow them to dry. Next, if they are of iron, they should be given a very light coat of thin varnish. This will prevent rust streaks on your window sills and frames when they are put up again. If the mesh is of copper or brass, they should be wiped with kerosene, and then wiped dry. If the mesh is of aluminum or any white-metal, you do nothing to them except to wash them. When you store them, treat them in the same manner as the storm-sash. If your mesh is made of any of the new plastics which have appeared in this field recently, you need only wash them.

From a practical standpoint, we are not at all in accord with some of the suggestions we have seen to the effect that the time to paint storm-sash and screens is when you take them down. You are only taking them down to store them, and naturally you will be storing them in the basement or in the garage where they will be sheltered. Why waste several months of the life of the paint? It seems to us that it would be better to paint immediately before they are put in place, and thus get every possible bit of benefit out of the paint you use.

There are other large pieces of auxiliary equipment

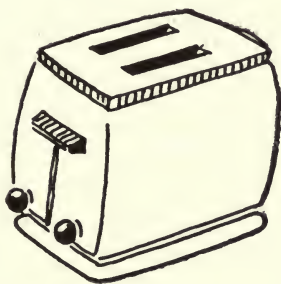
found around the average house, such as storm vestibules and double doors. There is hardly much that can be said about these items, except that the hinges get an occasional drop of oil and that the wood be kept in good paint condition. However, in many cases you will find that the storm vestibule is nailed together, and every season it has to be pried apart. This is a really bad job, because after a few work-outs it will be badly torn and shaken up. The time to correct the condition is while the vestibule is still standing in place. Buy a dozen or so small galvanized iron angles, and fasten the vestibule in place doubly. Use small screws to attach the angles. Next remove the screws which hold the vestibule to the walls and floor only, and then pry the assembly away, remove the nails for good and ever, and you will have the angles all ready in the right places for re-assembly next season.

Storm doors and screened doors are frequently not fitted with springs or door-closers, which means that they are not at all effective. You can buy coil-springs, with a hook for each end, for ten cents; and they will do quite as good a job as a ten-dollar automatic door-closer. You can go further, and buy for twenty-five cents, a door-catch, which will take up the slam of the door, and hold it tight in place as well. You can buy and install spring-hinges, which will do or are supposed to do, the work of both coil-spring and catch; but our own experience with spring-hinges is that they are not too effective and seem to lose strength rapidly.

There is nothing more annoying than half-open doors

in the insect season, or doors that will not remain tightly closed during the heating season. You can take care of all of this with ease and economy.

The above fairly well covers the heavy outside auxiliary equipment of a house, so we will get along to the



All the small items of mechanical equipment used in the house should be kept in decent repair. Neglect will mean replacement.

numerous gadgets and smaller items which make up the bulk of the home mechanical labor-savers.

Probably the first item on the list will be the electric iron. Electric irons only have one defect, and that is occa-

sionally they fail to heat up. Once in awhile you may find that this is caused by a bad cord or plug, but it is quite simple to determine this, by using another cord which you know is in good shape. If a new cord, or one which operates perfectly with your toaster or chafing-dish, fails to make the iron work, you must look further; and you do not have to look very far. All electric irons work on the same principle—namely that they contain a wire coil, which resists the passage of the electric current, and so becomes red-hot. This heat is transferred by contact to the bottom of the iron, and as a result you have a hot surface to iron with. As a rule, when an electric iron fails to heat, it is due to the fact that this fine-wire coil has been burned out (if the coil were heavier, it would not burn out, but at the same time it could carry the current and would not get red hot). The average standard electric iron has a handle which is attached to the iron itself by means of two bolts or screws. When you loosen these and remove the handle, you will find that the top of the iron has also been loosened and will lift off. You will then see a clay or tile-like plate the same shape as the bottom of the iron, and you will see that it has grooves in it which hold the fine wire coil we have mentioned. A close inspection will show you where this coil has burned out and broken. Your job consists entirely of pulling the coil or ribbon out, until you can twist the separated ends together, or better yet, to buy a new coil and connect it to the terminals. Here is an elementary job. The passage of electrical current has been interrupted, and your job is to

restore the passage of current by re-connecting two fine wires. The one caution is to be sure that your twisting operation is neat, and that no loose ends contact any other part of the coil. In some of the newer types of iron, we find a receptacle which contains water which is heated into steam by the coil, and which spouts steam and thus dampens the cloth the iron is about to pass over. The repair of this type of iron is exactly the same as for the plain electric iron.

Electric fans are usually good for a life-time, because they consist entirely of a small motor with a shaft, on the end of which are the revolving blades of the fan. The attention they require is confined to a drop of oil every few months (to be put into the very evident oil-cap), and to keeping the cord from becoming so twisted that it will eventually break. Occasionally an electric fan will be dropped from a shelf, or will "creep" off a table and fall to the floor. This will result in bending the wire cage which protects the blades, or in throwing the blades out of alignment. There is nothing easier than to bend the wire cage back into position so that it does not interfere with the revolving of the blades, or to bend the blades back into position so that they throw a current of air properly. The caution here, is to see that nothing whatever interferes with the blades while the fan is in operation, because if you jam the blades while the fan is turned on, you will burn out the motor or blow a fuse. Always turn the fan by hand, before you connect it up, and be sure that it is free to revolve.

Vacuum-cleaners are a standard piece of equipment in almost all homes, and they suffer chiefly from the fact that they are used from one end of the year to the other, without any thought of cleaning them, oiling them or adjusting them. The wonder is that they last as well as they do. Basically the average vacuum-cleaner consists of a good, small, rugged motor with a shaft, to which is attached a fan or impeller. In exact reverse to the electric fan, the vacuum-cleaner motor-fan sucks in air instead of throwing it out. As a result, you can well imagine the amount of fine dust, lint, hairpins, small stones, and other odds-and-ends too small for the human eye to detect, that find their way into the cleaner through the fan, and into the bag. If you use an ordinary carpet-sweeper on the floor of the average well-kept house, and open the receptacle, you are astonished at what you picked off the floor. When you operate a vacuum cleaner which is about twenty times as efficient, you really begin to pick things up. There is only one story about vacuum cleaners, and that is to keep them oiled, cleaned, and generally attended to.

All vacuum cleaners have a casing which covers the motor, brushes, and commutator. This casing is tight, but not tight enough. It can usually be removed by taking out two set-screws, and the motor will be exposed. Every week the casing should be taken off, and the motor, brushes and commutator, wiped with a rag on which you have a few drops of light oil. You should put one drop of oil in the oil-caps or oil-holes every two weeks (one drop, no more).

You should empty the dust-bag religiously, because when it is too full, the motor is working against a back-pressure. Whenever you hear a strange noise in the vacuum cleaner, you should snap the switch, turn it over, open it and see what has been picked up which the impeller has not been able to digest. In short, treat the machine as you would a sewing-machine, and not as you would treat a steam-shovel.

For a few dollars you can have the brushes and bearings looked over by a competent man once a year. It is worth the expenditure.

Washing machines are pretty sturdy pieces of equipment. We believe that the manufacturers of them realize that they will probably be overloaded, and therefore make due allowances for it, but in spite of that the four-pound washer usually gets a six pound charge, and if the owner has been warned not to attempt to wash small rugs in the machine, they will try it anyhow. Washing machines are usually built along the same pattern; a revolving disc swirls the contents of a hopper or receptacle, and presents in a few moments the same effect that might be had after an hour's labor over a scrubbing-board. The heart of all washing machines is the motor, and as a rule it requires lubricating at regular intervals. The average owner of a washing machine will read with care the directions about the amount of soap-powder to add to the water, and will be careful about the temperature of the water, but will give scant attention to the directions for the care of the working parts. Our first advice is to get out the pamphlet

which came with the machine and read it thoroughly. If you have failed to lubricate when and where the directions direct, do it immediately. If there is any odor of overheating, or any unusual vibration in the machine, call for the representative of the manufacturer. Do not attempt to make washing machine adjustments yourself.

Electric toasters, as anyone can see, toast bread because a series of flat wires glow red-hot and brown the bread which is placed near them. Outside of possible trouble with the cord, the only trouble developed with a toaster is about the same as that developed in the electric iron; namely that the ribbon burns through and the current is cut. Most toasters are made so that new heating surfaces are available, and can be put in place without any difficulty. It is also possible to re-connect the burnt-out ends in the same manner as recommended for the electric irons, but the cost of new plates is so small that we do not recommend it. The average toasting surface should last for several years, so there is little to be gained by attempting to repair it.

The time-honored carpet-sweeper is still a very efficient and handy machine to have around the house. Many people prefer it to the vacuum cleaner because it has a gentle action on expensive rugs or carpets, and does not wear them out as rapidly as some types of vacuum machines. The action of a carpet-sweeper is simplicity itself. The small rubber-tired wheels which roll across the floor, are geared to two small sweepers which brush up the dirt and whirl it into two long pockets. The reason that most

people think that their carpet-sweeper is worn out, is that it needs a good cleaning. We would wager that if you were able to get your hands on a hundred carpet-sweepers at this moment, you would find that the small sweepers were practically jammed with pieces of twine, lint, hair and strings, until their effectiveness as sweepers was completely gone. We would make another wager to the effect that the dust pockets were so filled as to prevent another ounce being taken in. You do not have to oil, adjust, or overhaul carpet-sweepers; simply clean out the brushes and empty the pockets.

All of the repair parts for the average small auxiliary household devices and machines are easy to get today. Hardware and specialty shops are loaded with switches, plugs, connections and sockets. Manufacturers are catching up with the demand. Never discard any piece of auxiliary equipment until you are sure that it cannot be repaired, because as a rule it is the frame which costs the money, and not the parts.

In practically every house and apartment today, you will find an electric refrigerator or a mechanical refrigerator which operates by a gas flame. It might be said at the start, that repairs to refrigerators cannot be undertaken by anyone other than a mechanic skilled in that kind of work. We must confess that although we fancy ourselves as more or less of a good mechanic, we noticed that our own refrigerator continued to start and stop frequently, and failed to freeze the ice-cubes properly. We removed the head of the box, exposed the mechanism, and tried our

best to find the difficulty, without any success whatever. Motor, starter, wiring, and everything else seemed in good shape. When the refrigerator man took over, he showed us that there was a cooling-plate composed of fine baffles through which air flowed to cool the motor, and it was completely filled with dust so that it was solid. The motor would run for a few minutes, heat up, and stop. As soon as it cooled, it would start again. We missed the cooling-plate because it was inside a metal duct, and unless you were thoroughly acquainted with the design of the machine, you would never find it.

We have always believed that the best instructions and advice on keeping anything in repair, is the kind of advice which shows how to avoid the necessity of making any repairs, so we had quite a talk with the refrigerator mechanic. Now we know that ninety percent of the trouble with refrigerators comes from what might be called "careless treatment." The average refrigerator frosts-up too fast and too often; therefore the ice-cube trays stick in the box, and have to be yanked at, tugged at, hammered and strained, in order to remove them. As a result the fine tubes are frequently broken, the ice-chest warped out of shape so that the small door will not close tightly, and the machine forced to work overtime to accomplish what it should be able to do with ease. Heavy frosting comes from having too much moisture in the refrigerator. In other words, open dishes or liquids and wet shelves. If the refrigerator is kept dry, and no exposed liquids kept in it, it will not frost-up rapidly. You should never at-

tempt to defrost a box by chipping away the ice. Disconnect the machine, open the door, and the refrigerator will defrost itself in an hour. Still another cause of difficulty is the fact that the rubber gasket around the door becomes flattened out and the box is not tight. You can see this at a glance, and you can replace the gasket. As a rule they are fastened inside the door edge with a removable molding.

Mangles which are used for ironing, and incidentally becoming more popular in these servantless days, are what we usually call heavy-duty machines. They are composed of two rollers, one free-wheeling (revolving by itself), the other motor-driven. The clothing or linen to be ironed, is started between the rollers and drawn through, coming out in back of the rollers, pressed. There is an adjustment on the rollers which presses them closer together or allows more space between them. Invariably, the operator will try to put through material which is too heavy for the adjustment, and thus throw too heavy a load on the motor. There are other types of mangle, composed of a revolving roller, heavily padded, and a pressing-plate which becomes very hot and which comes down in contact with the roller. The material to be pressed is squeezed between the two and thus ironed. This type of mangle can give a hard or a soft press by means of a foot-operated pedal, and these particular machines are practically fool-proof. The motors are slow-speed affairs and seldom require any attention whatever.

There are probably a hundred more small, hand-

operated, mechanical gadgets used in the average house. You will find meat-grinders, mixers, egg-beaters, fancy can-openers and pressure cookers. Most of them are simple affairs and more or less inexpensive. The electrically operated or motor-driven gadgets are the ones which you want to watch and care for, because they cost money. There will always be a small orifice in a motor-driven gadget, which will say "OIL." Don't continue to use any piece of equipment while it is whining and crying for lubrication. A fifteen-cent can of light oil will take care of everything you have in the house for the next two years.

Chapter 11

THE CARE OF SHEET-METAL WORK

TO THE average homeowner, all metal which is not obviously brass or copper is known as "iron." Of course he is not quite right on that score, because today there are many different kinds of metals and metal alloys used in the make-up of our houses and our equipment. The art of metallurgy has advanced beyond the wildest dreams of past generations, until we have arrived at a point where the entire body of an automobile can be stamped out of one sheet of metal at one punch, and castings can be made which are so intricate, that a few years ago it would have taken ten castings and a lot of machining to produce the same unit. Research and development on the part of the large manufacturers can be thanked for it. As a net result, we find that almost all the sheet metal used in the modern house is particularly adapted for the job it is intended to do, and all the sheet-metal used in our numerous household appurtenances has been specially made for a purpose.

The most important pieces of sheet-metal in your house are the flashings around the chimneys and above the door and windows. These are usually made of copper and should never give you any trouble, but if they are

of sheet-iron or any other corroding metal, they will have to be watched carefully. Full instructions for the proper treatment of flashings has already been given in the chapter devoted to exterior household repairs.

The next sheet-metal work, in line of importance, is the smoke-pipe from the heating plant. Usually this is of plain black sheet-iron. If you have a particularly good installation job, it may be of heavy-gauge galvanized sheet-iron. Whichever it may be, it will not last too long, because the intense heat from the boiler or furnace will burn it out. We have seen smoke-pipes that looked perfectly good, but upon pressing the surface with our finger, it went right through. The best way to test a smoke-pipe, is to jab it lightly with a heavy nail. We do not mean to stab at it violently; just poke it lightly. If the nail goes into the pipe, you have a completely burned-out section and it will have to be replaced. New sections of standard diameters are available in any hardware store at a cost of about fifty cents each. If the point of the nail alone enters the pipe, you had best test further along, as the metal is about on its last legs. You may get another season out of it, and you might not.

Another important item of sheet-metal work is in the vent from the gas range. This should be tested in the same manner as the boiler or furnace pipe. Both range-vent and boiler pipes should be painted or enameled. The best method for this is to use the special "smoke-pipe enamel" made for this purpose. Ordinary paint is useless and dangerous on hot surfaces.

Much of the cabinet work used in kitchens, and some of the bathroom cabinets are made of sheet-metal. Practically all oven doors in modern ranges are made of sheet metal. Usually this metal is not spring-steel but simply sheet-steel, and so, it can be very easily bent out of its proper shape. Once this has been done, it is a job for a sheet-metal worker to take care of it, and it is questionable if even he can ever get the door back in true shape. There are lots of housewives who are very careful of the things in the house, but who have a bad habit of opening the oven door, sliding out a roasting-pan with a heavy piece of meat on it, and letting it slam down on the open door. After a year or so of this performance, they will start to notice that the oven "smokes" and the kitchen is filled with fumes from the roasting food. The oven is not smoking one bit more than it used to; but the door is not closing as tightly as it used to, because it has been gradually bent out of shape. You must remember that sheet-metal is quite thin, usually not springy, and can easily be bent.

Pots and pans, coffee-pots and percolators, trays and metal dishes can all be straightened out and dents removed, if you know the trick. The basic rule for removing dents, is first that the article you are working on must be backed up. In other words, if you have a nice brass tray with a bad dent in it, you should lay the tray on a flat hard surface, such as an upturned flat-iron (an anvil is the right thing, but you won't have an anvil around the house), and lay it so that the bump or dent is up, and

not on the iron. The next rule is that you take a medium heavy hammer, and tap the protruding dent with slow light raps. If you give it heavy hammer blows, you will mark the whole surface around the dent. After a dozen or so light raps you will see the dent melting away, and before you know it you will have an even surface again. The reason for this is that the metal is malleable, and the repeated light blows gradually move it flat against the backing.



All sheet metal is subject to denting. Most of the damage can be repaired by beating out the dent while the undamaged surface is backed against a hard and solid base.

If you have badly dented pots, they can be worked back into a smooth surface again by setting them on the side over a hard backing, and tapping out the dents with a light hammer.

Your first attempts at sheet-metal work may be rather bad as far as professional results go; but if you fool around with it long enough, and learn the temper of the metal you are working on, you will be surprised at what you can accomplish.

MAKING THE HOME SAFE AND COMFORTABLE

TO OUR WAY of thinking the words "safe" and "comfortable" are synonymous when they are used in connection with houses or homes. You seldom hear of a comfortable house which is unsafe, and you rarely have heard of a really safe house that was uncomfortable. It might be that people who like their comfort are careful about their safety, and the other way around. Be that as it may, we have talked to engineers from several of the insurance companies, and the general consensus of opinion seems to be that when you find a house which is kept in good repair and is comfortable, you also find a safe house.

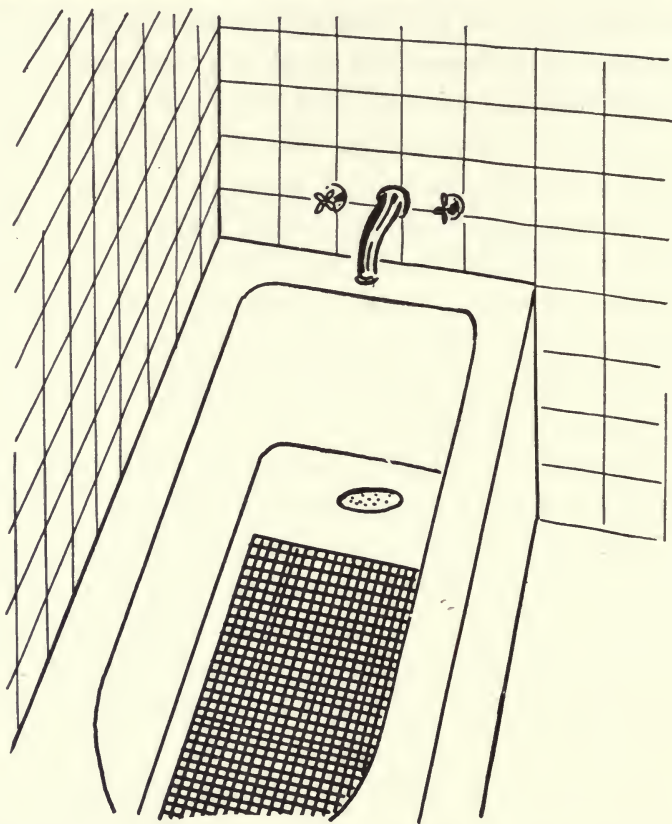
A few years ago, the combined insurance companies published a report on household accidents. It was a most astonishing thing. It stated that there had been 37,000 motor-vehicle fatalities during that year, and believe it or not, there had been 31,500 accidental deaths in and around homes during the same period. They also said that about eighty percent of these household accidents were definitely preventable. We have our own ideas about this subject. We believe that these household deaths can be laid to pure carelessness and deliberate laziness on the part of the

people who live in the houses. A man will trip over a lamp-cord, turn around and scowl at it, and mutter under his breath "some day I'll break my neck on that," and go right along doing nothing about it. A woman will say "I hate those cellar stairs they are so dark," but go right ahead using them. When we are on trains, on the street, in office buildings or almost any place, we are surrounded by protection of some kind or the other because the law insists on it; but once we get in our own front door we are on our own, and nobody has anything to say about it. Hence the 31,500 figure.

The remedy is simple. If you want a safe house, take a half day off and do as the safety-engineers do in a factory. Survey the premises. As a matter of fact you hardly need go to that trouble, because you know every one of the danger spots by heart if you have lived in the house for six months. When you make your survey, or a list of the danger points which you know about, get to work to eliminate them one by one.

More than one half of the deaths are caused by falls. Falls are caused by just one thing—insecure footing. Stair carpets that are worn or torn at the edge are just waiting for a bad accident. You can move the carpet so that the worn edge is at the back of the tread, and the practically new carpet which has been at the back of the step is out in front. Really not a hard job.

Basement stairs without hand-rails are simply invitations to trouble. You can buy rail for a few cents a foot, brackets for a quarter apiece, and install a substantial



Household accidents are chiefly preventable. The cost of preventing them is very little. A rubber bath-mat may save a broken hip.

rail in two hours. If the stairs are dark, spend the money to have a light installed.

Slippery bathtubs account for more broken arms, legs, and hip-bones than all the railroad accidents in the entire country. Rubber mats can be bought from fifty cents up. Do not rely on your ability to grab a towel-bar,

because they were made to support a couple of towels, and not a man or woman.

For some reason, people like to put brooms, mops, buckets and other articles at the head of the basement stairs; and of all things that will hasten your end, we can recommend a nice clean milk-bottle on the second or third step down. Brooms and mops should be hung up. Buckets and empty bottles belong on a shelf. Hooks for the end of a broom-handle cost less than five cents apiece. A shelf is worth about two dollars, plus an hour or so of your own time.

Medicine-cabinet doors with sharp corners, always open just enough to gash your scalp as you bring your head up, account for nearly a hundred minor accidents, and the cabinets themselves for many deaths because people groped in the dark, and found the wrong bottle. No drug that could cause death belongs in a family medicine cabinet.

Among the best producers of household accidents are the slipping rugs. With the present trend toward highly-finished floors, the rate is going up rapidly. Small rugs at the foot of stairways are the chief offenders. There is no excuse for any of this when you can buy non-slip material for the bottom of the rug; or, if you do not like that, a thumb-tack in each corner is very effective.

Standing on chairs, piles of books, boxes and tables simply invites injury. All homes should have a good, substantial ladder. It will pay for itself a hundred times over,

and if you do have to get up near the ceiling, you can do so in comparative safety.

In a year's time, one thousand and thirty-five women sustained very bad cuts in their own kitchen, and one insurance company alone paid out \$45,000 to its policy holders. The reason was simply that they had sharp knives in kitchen table drawers, thrust their hand in among the utensils and got badly cut. Sharp knives belong in wood holders out in plain view, and not in a drawer mixed up with a lot of other things. To go on with kitchen affairs, it appears that trying to open cans which were held in wet hands accounted for scores of painful injury, and the bad habit of putting heavy articles on high shelves for as many more. Heavy objects should be kept where they can be handled firmly, and dry hands should be used in handling any implement with a cutting edge.

Many gas ranges have pilot-lights which continue to go out, and many hot-water heaters have the same complaint. To live in a house with either one is simply to invite death by asphyxiation. There is no actual extravagance in a good strong pilot light on gas-burning equipment. It is a definite economy.

Your survey should include the immediate removal of all cleaning fluids. Some of these liquids have a very peculiar way of acting. The fumes drop to the floor instead of rising upward so that you might smell them, travel along to a wall, and then rise. If they happen to encounter a flame or a spark, the flash travels back to the con-

tainer, and there you are. Open windows do not help a particle.

Broken or loose bricks in steps, loose treads in wood stairs, loose electric light sockets, frayed wires, cracked panes of glass, chairs with a weak leg, a loose board, a broken linoleum edge, are all minor defects that the average man can and should take care of if he values the safety of his family and himself. Each small item means only ten minutes here or an hour there.

Fire safety is a tremendous subject, and one which cannot be covered in a few paragraphs or even in a few books, but as it applies to the home, this much can be said. You must be sure of the condition of your heating plant and fireplace flues. You must have screens for the fireplaces if they are ever left unattended while in use. You must be sure of the condition of your electrical system, which includes all plugs, sockets and wires. You must get rid of all accumulations of trash, old furniture, papers, boxes or other inflammable material, particularly in attics or basements. Every time you put another cardboard box in the basement, you increase the fire hazard. Keep your house clean and you go far toward keeping it safe.

When we speak of comfort in the house, we do not particularly mean the comfort of adequate heat or of sufficient water supply, as those items have been dealt with in previous chapters; but we mean the smaller things which add to our ease, or the lack of which causes us discomfort. Here again is a problem which resembles that of safety; and in order to handle it properly, you must

make another survey or make a list of the little things which are lacking or the small things which annoy.

We lived in a house some years ago which was well built, well heated, had two bathrooms and a downstairs lavatory, nice bedrooms and a completely equipped kitchen; but it was the most uncomfortable house that you could imagine. Everything seemed to be there, but never in the right spot. If a house could possibly have an irritating personality, that one had it. As an example, the telephone was in a small library off the living room. If you happened to be upstairs when it rang, you had a trip downstairs across the living room, and to the end of the library before you could answer. The house had a stairway, with a landing a few steps up, which was just about in the very center of the lower floor. It was equally distant from kitchen, dining room, and library. We had the telephone moved and placed on a small table on the landing, and we frankly believe that everyone's disposition changed immediately for the better. You could reach it at one jump from any of the rooms downstairs, and by coming halfway downstairs if you were on the second floor.

This house had a very fine electric refrigerator in the kitchen, but if an expert had been paid to figure out the most inconvenient place for it, he could not possibly have done any better. It was in the farthest corner away from the service door, and in the farthest corner away from the range. In short, if you wanted anything out of it while you were cooking you had to walk entirely across the

kitchen to get it, and you also had to carry everything that was brought into the house entirely across the kitchen to put it in the refrigerator. The cabinets for storing the china and glass-ware were as far away from the sink as it was possible to put them. The plug for the toaster was at the opposite end of the room from the range, so that you had to fry eggs at one end and toast bread at the other.

The living room was another annoying area. There were several base-plugs for lamp cords, but they were all located at points where no one could possibly think of placing a chair or locating a table. There were quite a few windows, but they were all in one wall and badly placed at that.

It took about a year to iron that house out so that we were not annoyed at every hand's-turn, and it took a bit of planning too. In the end, however, we had a comfortable house with things where they belonged.

The above is what we mean by making a house comfortable. You can take each room of the average home and study it. You cannot change window or door locations without considerable expense, but you can rearrange a room so as to take the best advantage of what it does offer. You can locate conveniences where they should be, you can change doors so that they swing differently, you can have additional electrical outlets installed with little expense, and do a hundred things to make the house more livable. Closet space is one of the chief needs where the family is large, and although your closets may be small

ones, you will find that additional shelves and scientific planning will double the capacity.

You can never tell about a house until you have lived in it; and after a few months' occupancy you should know what there is about it that you do not like or that annoys you. From there on you can work away at your annoyance list, and eliminate the discomforts one by one. The building and equipment fields are full of new and clever ideas for better and more comfortable living, and undoubtedly you will find among them the answer to each of your problems. Be sure though before you buy; and do not be like the woman who was annoyed because her husband had so many hats in the coat-closet, that there was no room for her own. She bought a beautiful chrome-plated hat-rack which she presented to him. It would hang on the back of the door and accommodate six hats; but when he went to put it up, it was four inches too wide for the door.

Chapter 13

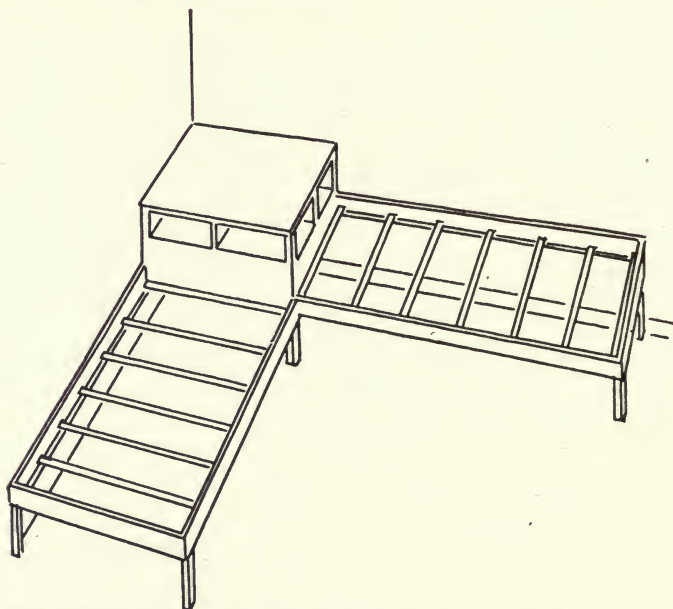
BUILT-IN FURNITURE

DURING the last two or three years there has been a decided tendency toward built-in furniture. This comes from the fact that the cost of modern home building is so great that when the average young couple is finished with their home they have practically nothing left where-with to buy furniture. There is an old saying to the effect that practically everything in this life compensates; and in all honesty it must be said that the progress made in the built-in furniture line has completely offset the increase in cost of portable furniture.

A careful check of the cleverest ideas which have been developed for small houses during the past few years shows that it is possible to furnish your entire house with built-in furniture for as little as one-third of the cost of the ordinary, orthodox furniture which we are used to looking at. It might also be said that the construction of this built-in furniture is such a simple matter as to really cause one to wonder why the trend has not reached greater proportions.

Specifically, what we mean is simply this—say you have a bedroom which is 12 x 18 ft. square; it is possible to build two built-in beds in one corner of the room with.

a night table at the head. In other words, you simply construct two frames in accordance with the attached diagram, at a total cost of probably fifteen dollars for both lumber and material. When you are through with this operation, you simply have to have two box springs and two mattresses in order to have complete, comfortable



Built-in furniture is both easy and economical to construct. There is a decided trend toward furnishing houses in this manner.

sleeping accommodations. As a matter of fact, if your finances do not permit of the purchase of two box springs, it is perfectly simple to have two sheets of plywood laid over the slats and to have a mattress put on top of that. (It is rather interesting to note that during the last few years people have been paying five dollars for so-called

"beauty-boards," which are supposed to keep one's spine in an horizontal line and do away with the curvatures that are said to result from a too-soft bed.)

It is a positive fact that the lumber necessary to construct one bed of the type shown in the illustration would not cost more than five dollars; and the time of a mechanic to cut and assemble the unit would most certainly not exceed one hour.

Now—finished with the beds—the home owner should realize that the building of a very attractive dressing table is another idea which merits consideration. Fortunately, plywood is so easy to use and has such wonderful possibilities that an entire top, apron and sides are easily constructed over a light frame, which will result in a unit such as the one illustrated. Stock drawers can be bought from any mill; and the frame of your dressing table need only be so constructed as to accommodate the number of drawers you want.

Done with the beds and dressing table, you might be interested in a corner settee. Certainly there is nothing easier than the construction of this unit of furniture. One glance at the illustration shows exactly what is involved, and, providing that you have sufficient sense to build it so that it will take a standard cushion, there is nothing involved which will prevent your having a corner settee in your bedroom at a cost of a very few dollars.

When you have a bedroom equipped with two single beds and a night table, plus a dressing table and a settee,

you actually need only a rug and a floor lamp in order to have a completely furnished bedroom.

If you had to buy twin beds and a night table, a boudoir chair and a chaise lounge, you would probably have to invest about three hundred dollars. The cost of your built-in furniture would honestly not be more than fifty dollars.

All of the above will probably give the homeowner something to think about, and that is precisely what we would like. Nevertheless, as built-in furniture is a particular hobby of ours, we would like to continue along the same lines with a few more suggestions.

You have already been told how very easily you can make or have made built-in beds, settees and dressing tables; but there are other rooms in the house which can be handled in the same manner. We all know that living room furniture is costly, in fact you can spend two months' salary on a rug, a set composed of sofa or couch and two chairs, and still have a rather bare-looking room. Frankly we would prefer to do our own living room in ultra-modern manner, and have a better-looking room at about a third of the price. The idea that it is an impossibility is ridiculous, because you might take one item as an example and figure it out for yourself. Most smart living rooms are equipped with or have what is known as a credenza. This is a break-front piece of furniture from four to ten feet in length, and has open or grilled shelves on which books may be stored in line, and has a top upon which you may place ornaments or vases of

flowers. The average credenza is about all the furniture that you might want to completely fill one wall and furnish it thoroughly. With a mirror or a good picture above, you can arrive at a distinctly good-looking wall.

To build a credenza is really a simple matter. The first step you take is to decide how long the piece should be. Finished with that you decide upon the height. When these two measurements are established you proceed to build. Step number one consists of nailing a piece of furring-strip (1" x 2" rough strip) along the wall, for both the length and the height of the credenza you want to build. This establishes a starting point, and incidentally a starting point is the only thing that bothers an amateur carpenter, plumber or stone-mason. You next take a sheet of plywood, and lay out exactly the size of the top that you want on your credenza. You saw this out with considerable care. From here on you just have the job of making a frame which can be covered with plywood, and which will enclose the front of the credenza on both sides. You can set your shelves in as you want them, or as they will accommodate the size of books you have. If you have the ability to use a six-foot rule or measure, and have the patience to cut, and try, and fit your pieces, you are bound to end up with a decent job. The whole point is this, and believe us we have been through it many a time; that when you have established that strip on the wall, and cut out that top piece, you are three-quarters along with your job. Believe it or not, we stopped in a house at Westport, Connecticut, a few months ago, to

look over a very unusual house which had been bought by a friend, and we saw one of the most beautiful credenzas we have ever laid eyes upon. It practically covered a wall from end to end and from floor to ceiling. Made by a fashionable decorator (or his contractor) it would probably be worth a thousand dollars, because it was massive; but looking at it, and knowing the business, we could hardly keep from making a mental estimate of how much it would cost the average tool-handy man to make himself. The lumber probably was worth twenty dollars, the metal-mesh another twenty, and the time frankly was unestimable because there was no way of knowing how good the local carpenter was. Judging by the joining, and the nicely-sanded ends, he was very good, but there was nothing about the whole assembly that could not be duplicated by someone with the will to do it.

There is something else about built-in furniture which we think has been sadly neglected, and that is the distinct bearing which painting and decorating has upon all built-in fixtures. It all resolves down to a matter of good taste. We know that when a room is done in one color, walls, trim and ceiling, it not only appears to be larger but it also appears to be more smooth and restful. In short, a better decorating job. It lacks abrupt contrast and disturbing features. Now, if your built-in furniture is painted in the same color as the walls, it blends into the entire scheme and you arrive at a furnished room which is not only furnished, but nicely furnished. To avoid monotony in an overall color or tint, it is certainly simple

to use cushions of an off-color (but not clashing), and it is surely simple enough to paint the back of the shelves in a contrasting color (again not clashing) which will add a bit of interest.

We realize that it is easy to talk about this sort of thing, but on the other hand it is equally as easy to accomplish it. Suppose for instance that you had managed to build a set of book-shelves or a good credenza, and went in for a heavy contrasting color scheme at one point or another; and suppose that it turned out to be entirely amateurish-looking and instead of being a high-light it developed into an eye-sore. There is absolutely nothing under the sun to prevent you from letting the job dry thoroughly, and then give it a coat of the same color that covered the walls and ceiling and start all over again. In fact it may be fun plus experience at practically no cost. Incidentally, we have heard of people who were smart enough not to paint at once, but to paste up colored paper, eye it, and make up their minds about it before going into anything definite.

One could go on forever about built-ins, in fact books have been written on the subject which are distinctly worth reading if you are in the mood for refurnishing or modernizing your home. Practically all of the advice given is sound and makes good sense, and most of it points up the idea that built-in furniture is not only inexpensive, but functional and practical as well. It is easy to understand that a room in which the furniture is permanently placed, is a room which is easy to keep in good

order. Only a few days ago we were talking to the head of the service department of one of the larger hotels, and he told us that their records showed that a room equipped with built-in furniture could be made up and cleaned in thirty percent less time than it took to do up a room furnished in the regular manner. This should mean quite a lot to the small homeowner, whose wife does all of her own housework, and it certainly would mean a lot to the wife.

There are a hundred places in the average house which would be made more convenient and easier to keep in order with built-in equipment. When we compare a modern kitchen, with its orderly cabinets and counter-tops, to one of the haphazard kitchens of past days, we have a splendid example of the subject. The modern kitchen is all built-in of course, although the same old type of fixture is still there, the sink, range, closets, refrigerator and ironing board; but they are scientifically placed and installed. The same procedure should be applied to every other room in the house.

People are getting around to the understanding that vacuum-cleaners are better than brooms, and that washing-machines are better than the old scrubbing-board and wash-tub, and before long they will be thinking about built-in furniture for the same reasons.

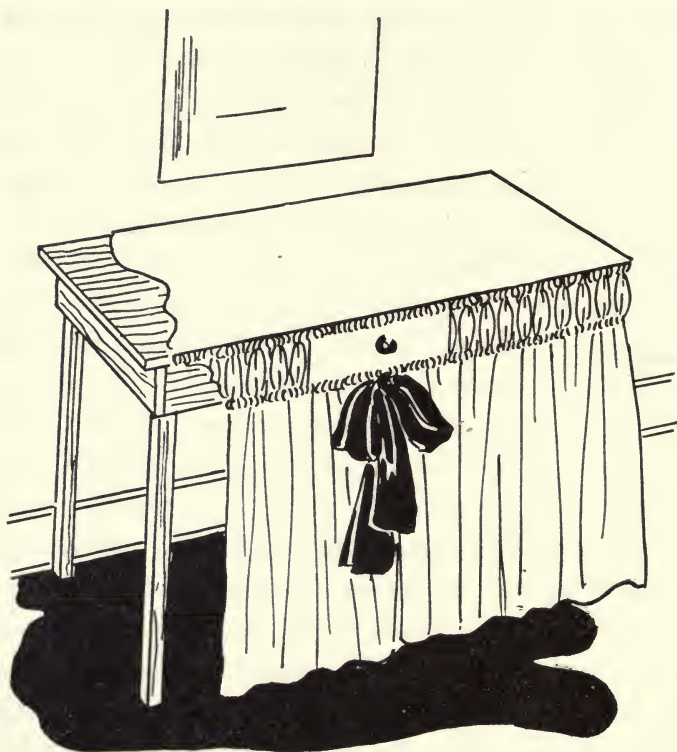
As with everything else, all action has to start with an idea or a motive. If you are really interested in the built-in furnishing idea, your first move should be to get some ideas and then put them into execution. If you have

one or more boys in the family, it might be well to start with their room, because boys are quite receptive to any sort of furniture that will take their room out of the ordinary, and they likewise are apt to have a room at the present on which you have not lavished a lot of time or money on curtains, frills or expensive furniture.

When you survey a room of this kind, the first step is to decide where you want the built-in beds. The corner selected should be one of the remote corners, so that the more accessible area immediately inside the door will not be obstructed. Your next move should be to locate the wardrobes, providing that ample closet-space is not already there; and next locate the desk and other pieces which will make up the entire furnishing. In short the room must be planned before you start to fit it out. You cannot accomplish a decent job by starting with one piece, and then finding out that it should have been on the opposite side of the room. Definitely settle locations before you start action, and by so doing you will obviate the necessity of repeating your work.

The homeowner should remember that an ordinary chest of drawers can be very nicely converted into a built-in set by cutting off the legs, cutting away the base-board so that the chest will set close against the wall, and fastening it there with one or two long wire nails. The correct procedure here is to use "hidden-nailing," or in other words, remove the drawers and nail from the inside of the chest. If the chest is a heavy piece it may not be necessary to nail at all.

Desks and other pieces of portable furniture can be converted in like manner. Imagination and careful study of what you want to accomplish are the main ingredients for success.



Many old pieces of furniture can be converted into attractive furnishings by using a little imagination and a very few dollars.

We have seen a room where an old couch, an old desk and two old chests of drawers, were cut down and built into the walls of the room. The walls, ceiling and furniture were then painted a French gray. All the old wood knobs

and metal handles of the old furniture had been removed, and replaced with solid flat brass pulls (these had only cost twenty-five cents each). The floor was covered with a very inexpensive plain wine-colored rug. It was one of the most attractive and well-done rooms we have ever laid eyes upon.

Every time you pick up one of the good magazines, you will see perfectly splendid examples, usually in color, of many fine rooms. Many of them will be done in the ultra-modern fashion. If you will study these, and try to draw comparisons with what you have to work with in your own home, you will probably end up with enough ideas and motives to keep you both busy and interested.

TOOLS AND THEIR USE

SINCE the beginning of history, men have been inventing and making tools for the sole purpose of making their work easier or better. The strong-man in the circus can drive a nail into a board with his bare fist, but it is easier to use a hammer; and you can part a wire by bending it back and forth until it breaks, but it is quicker and neater to clip it in half with a pair of wire-cutters. That, in a nutshell, is the sum and substance of tools. At this particular time, there exists a tool for every household job imaginable. Most of them are quite reasonable in price, because up-to-date tools are made on a production basis, and not forged out and filed smooth by hand as had to be done in the early days. Modern tools are also better, because tool-makers have learned a lot about the temper of metals; and they have studied tools of their own manufacture which have been returned for repairs, and thus learned to strengthen them and to improve them. As a result, the homeowner can fit himself out with a splendid set of household tools, which will enable him to do an average good job, once he learns how to use them.

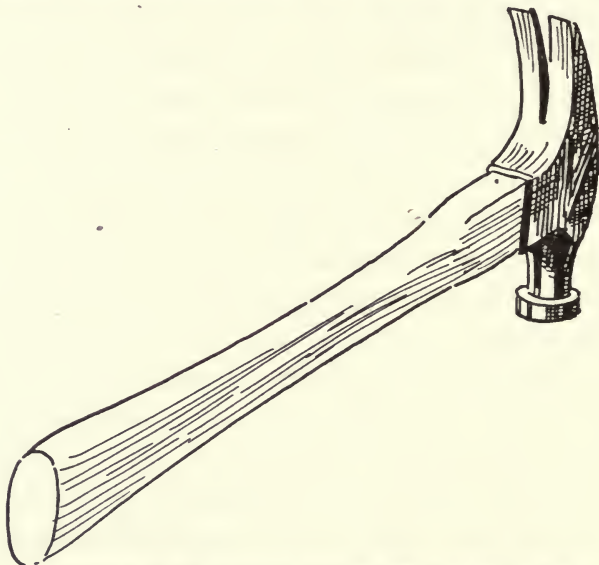
Tools are the most functional implements in the world, and if they are used properly they will last for a

lifetime. Somehow or other, people just don't seem to get around to buying them as they should. We believe that we could retire as one of the wealthiest men in the world, if we were to receive one dollar for every picture-nail that has been driven into a wall with the heel of a shoe; or receive one-half a dollar for every screw that has been tightened up with the end of a table-knife.

There are only a few standard tools that are required for average household work. They consist of a good medium-heavy claw-hammer, a medium-size cross-cut saw, two screw-drivers, one medium and one small; a pair of wire-pliers. With this modest beginning, which calls for an investment of only five or six dollars, you can take care of most of the simple repair jobs. When you reach the stage where you begin to fancy yourself as a mechanic, you can add a rip-saw for cutting boards lengthwise instead of across, a plane for smoothing down boards or planks, a miter-box for cutting angles with precision, a Stillson wrench for pipe-work, a monkey wrench for tightening large bolts and nuts, a set of double-end wrenches, a hack-saw for cutting metal, chisels for wood and iron and stone work, and any number of special tools for any number of purposes.

The hammer has always been and probably will always be, the number one tool. It may be hard to believe that there are now more than twenty different kinds of hammers. There is the ordinary carpenter's claw-hammer (in about twenty odd weights), the machinist's hammer which has no claws for pulling out nails, the mason's ham-

mer which is used to break a brick in half or tap it into place, the slater's hammer which is used to punch a hole in a roof slate, the shoe-maker's hammer which we all have seen pounding away at leather, the heavy sledge-hammers, the rigger's hammer which is used on stiff canvas and heavy ropes, upholsterer's hammers, tack hammers, and silversmith's hammers. The average man will have use for only two or three of them. If he has a medium heavy



The hammer is the standard tool for all household repairs.

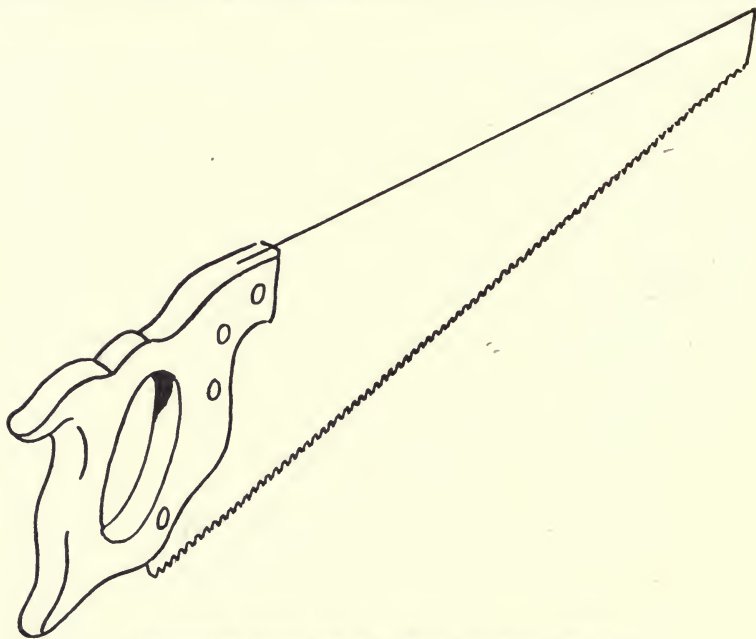
hammer, and a light hammer, he is well equipped. He should remember that to drive a heavy nail takes a heavy hammer, and to drive a tack takes a light hammer. Hammers suffer from only one failing, and that is the head may become loose. Some advice has been given along the

lines of soaking the hammer in water so that the handle swells and takes up the slack, but that is nonsense. The handle will dry out again and the head will be looser than ever. You can buy small, neat steel wedges, three for five cents, and drive one into the handle-end where it comes through the head.

When it comes to using a hammer properly, there is little to learn. Rule number one is that you always hold a hammer by the end of the handle, never halfway up. If you have trouble driving nails straight, remember that when you finish the blow, your hand must be level with the head of the nail you are driving. Note the accompanying illustration. If your hand is above the nail head you will bend the nail toward you; if your hand is below the nail-head you will bend the nail away from you. Lay out a piece of board, take three nails and try it for yourself. Buy a good, solid hammer, made by a good firm. Take care of it. Do not use the handle to mix paint with, or to pry open crates or boxes. Use it for hammering or drawing out nails, and nothing else. You will get used to the tool and be able to work well with it.

The cross-cut saw is the next standard household tool. A good substantial one can be bought for from three to six dollars. If you treat it decently, and not try to cut through nails with it, it should last for twenty years. As long as you are not a professional carpenter, it should not need sharpening for ten years. When you are through with your saw, wipe it off, and coat it lightly with ordinary vaseline, and then hang it up. The teeth of a cross-cut

saw are slightly off-set. In other words one tooth is bent slightly to the right, the next to the left. When it cuts, it leaves quite a wide line through the board. This is done so that the saw will not bind as it eats through. Always examine the board you are going to cut, to be sure that no

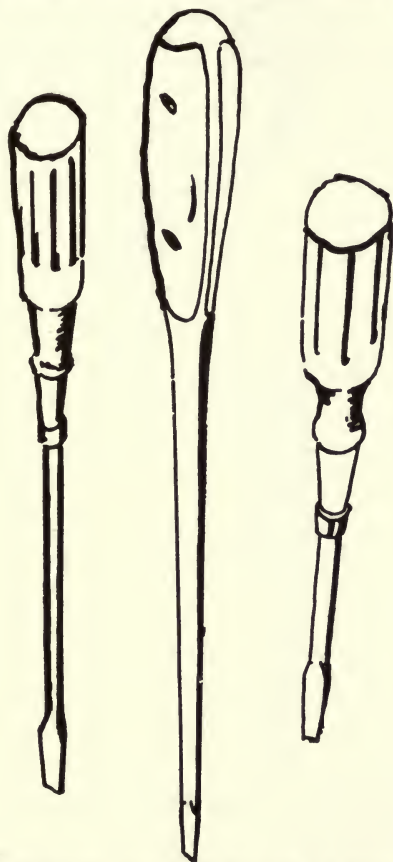


A good saw should last for years if properly handled.

nails are in line with the cut. Once in a great while, the bolts that holds the blade in the handle become loose. They may be tightened with a screw-driver. If the wooden handle breaks, don't throw the saw away. Buy a new handle for fifty cents, and set the old blade in it.

Screw-drivers come next in general use, and it must be said that of all the tools of husbandry, they receive

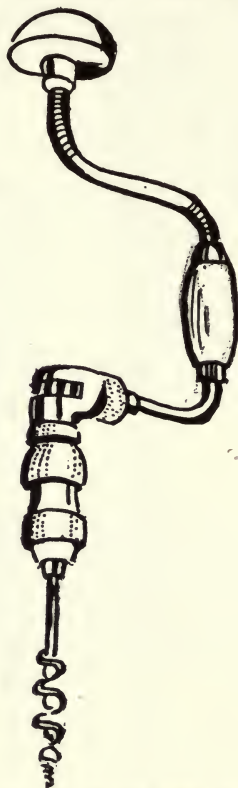
more abuse than any of the others. They are used as cold-chisels, pinch-bars, levers, and everything except to drive screws with. When you buy screw-drivers get good ones.



Several screw-drivers of various size will be found handy.

They only cost from fifty-cents to a dollar for really fine ones. Do not waste your money on five and ten cent items, because the first tough job you try will turn the blade

right out of the handle. The only trouble you will ever have with a good screw-driver will be that the end may become burred off and slip when you put it in a screw-



A medium-priced brace, and several drills, should be in every house.

slot. Take a fine file, lay the screw-driver flat, and file it back into a good square beveled edge.

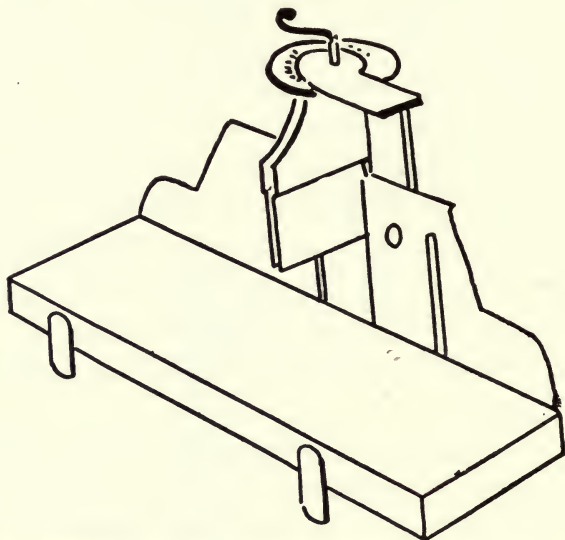
The brace is a tool used for boring holes in wood. They have an adjustment on the working end which permits you to insert bits or drills of various size. With this

tool, you can bore holes of any size up to about an inch. A good brace can be bought for about four dollars, and bits can be had from fifteen cents up. As a rule three or four bits are about all that the average man will ever have any use for, and they will last indefinitely unless you run across a hidden nail and chip off the cutting edge. The brace itself will need a drop or two of oil once a year, and that takes care of the maintenance. The only difficulty encountered in using a brace is in getting the hole bored in a straight line. You can handle that easily enough if you will start the bit into the wood, and then stand off a bit and sight your direction. Do not bore away until you are sure that your bit is exactly at the angle you are trying for. When you finish a hole, do not try to draw the bit back through. Reverse the twist, and it will back out easily.

Pliers are used for cutting wire or small nails. You can get a good pair for a dollar. When they are new they are apt to be stiff, but if you put one drop of oil in the hinge and work them open and shut a few times, they will ease up. The thing not to do with a medium size pair of pliers, is to try to cut through a heavy steel wire with them, or to hammer them to help make the cut. There are large pliers known as gas pliers or plumber's pliers, which are used for turning pipe or for holding against a wrench. These are handy tools, literally a hand vise, but are not used for cutting.

Rip-saws differ from cross-cut saws in that the teeth are all in line. When you rip a board, it means that you are

cutting with the grain of the wood and not across the grain. A rip-saw will run down a board in half of the time that it would take if you were using a cross cut. These tools should be handled exactly in the same manner as a cross-cut saw.



A mitre is essential when you are cutting molding or strip at an angle. Accuracy and close joints are assured by its use.

The miter-box is a very useful thing. It is composed of a wooden box with a bottom and two sides but no top, and with open ends. The sides have slots cut in them, which enable you to make a perfect angle-cut in any piece of molding or strip which you set in the box. If you are running a molding around the floor or ceiling of a room it is an indispensable tool. They can be bought for less than a dollar. We have seen some very fine picture frames

made by amateur carpenters with the aid of a miter-box, and we have seen some rooms where the walls were laid out in panels of molding with its assistance. If you contemplate any kind of nice close work, you should have one in the house.

Hack-saws are used for cutting pipe, rods or any kind of metal. They are composed of two parts, a frame and a blade. A good hack-saw frame is worth from two to three dollars, and will last for a lifetime. Blades are cheap, running about ten cents apiece, and can be inserted in a few seconds. There is no maintenance to the hack-saw, and it need only be kept clean and oiled against rusting. There are many times when this tool comes in handy around the house; for cutting curtain-rods or other metal objects.

The plane is a tool used for shaving down or smoothing off. For instance, if you have a door which fails to close by just a fraction of an inch, you can plane it off in a few minutes, while it would take a long time to saw it off, and even then you would not have as neat a job. A plane is made of an iron frame, perfectly level and smooth on the bottom, and having a slot in the bottom through which a blade projects. By using the adjustment at the top of the plane, you can have the blade project as much or as little as the job calls for. A good plane will cost you five or six dollars. It requires no attention other than that it be oiled to prevent rusting. New blades can be inserted if you nick or break the edge of one.

Shears, or snips as they are sometimes called, are sim-

ply big heavy scissors. They are used for cutting sheet-metal and nothing else; but they often come in handy when you have a piece of band-iron to cut or want to shape up a piece of copper or brass. We have a pair that we paid eighty-five cents for about twelve years ago, and although they have had considerable use, they are as good as when we got them.

The Stillson wrench is a tool used for pipe-work and hardly anything else, but if you have any pipe to tighten, or pipe fittings to unscrew, nothing else will do the trick as well. The Stillson has one stationary jaw which is part of the handle, and another jaw which can be opened or closed so that you can adjust it to fit the diameter of the pipe you are working on. The jaws have teeth which bite into the pipe and prevent slipping. If a Stillson is used a lot, the teeth will be worn smooth. In that event you take a three-cornered file and sharpen them up again. The Stillson is a rough, tough tool; good for years of service. They cost four or five dollars, but are handy to have around.

The monkey-wrench looks somewhat like the Stillson, but the jaws are not toothed although they are adjustable. They are used for turning bolts or nuts, or for holding a union on a pipe line against the pull of a Stillson. They are very handy for taking the bonnets off faucets or valves, and will not mar the finish as would a Stillson wrench.

One of the indispensable tools of the amateur carpenter is the square. Without this it is hard to make a right-

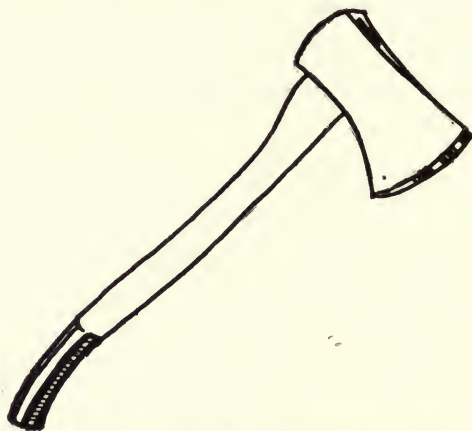
angle or true cut across a board. When you lay one side of a square along a board, the arm of it lies at a true right-angle across the board, and you can mark and cut correctly. They are necessary to use when you square-up the end of a board or do any straight cross-cutting.

A set of end-wrenches can be bought for less than a dollar. These small tools usually come in a set of five or six pieces, and they are splendid for use on small nuts and bolts.

Cold-chisels are actually small bars of iron or steel having a flat head and a sharp beveled edge. They are used for cutting masonry or concrete work, for cutting through large nails, or for any kind of tough work. They can be kept sharp by filing down the edge occasionally. They are worth fifteen or twenty cents apiece. If you ever have occasion to cut out the mortar joint between some bricks, you most certainly cannot use a nice wood chisel or a screw-driver. The tough cold-chisel is made for exactly such jobs. Most amateur repairmen have five or six different sizes of this tool around their work-bench, and find them useful.

Most of the people who are interested in making their own repairs live in the country or in the suburbs, and all of them know that the time-honored axe is a good implement to have on hand. For splitting logs or kindling they cannot be bettered, and of course they excel at tree work. A good axe is good for a lifetime in the average household, and the one trouble with them is that they get

dull. There is nothing more dangerous than a dull axe in a person's hands. It is far more dangerous than a sharp axe, because when you swing a sharp axe at anything, the blade bites and stays there, while a dull axe may well glance off and end up in your foot. An axe can be kept



A sharp axe is useful to the real suburbanite or country dweller.

beautifully sharp by filing the edge off on both sides so as to bring the edge of the blade to a paper-thin point. If you want to pass a whet-stone over the edge after that, you will produce an edge that you could almost shave with.

Before we get away from the subject of sharpening tools, we would like to say that all dull tools are dangerous. When a tool has lost its edge so that you have to put a lot of muscle behind your work, you are heading for trouble. If a tool is supposed to be sharp, it was never designed to require much effort to manipulate, because

razor-edge and great strain is a combination which does not exist in the tool world.

A level is a convenient tool when you are doing jobs that necessitate an absolutely horizontal finish. Nothing else yet devised will show you whether or not your work is true. If you are making a cement platform and want to be sure that the form is level, this tool is indispensable. Levels cost from fifty cents to ten dollars, but the ten dollar elaborate level will not be one iota more accurate than the half-dollar item. There are many times when you think that something is level, but later discover that it is far from being that way. This simple tool removes all doubt, and saves you the trouble of doing the job over again.

After the homeowner has reached the point where he is more interested in perfection of workmanship, he will begin to appreciate the usefulness of other small tools, such as the nail set, which enables you to sink the head of a nail just a bit below the surface of the wood; and the gimlet, which looks like a thin corkscrew, and which will drill a small hole in wood without the necessity of using a large tool such as the brace and bit. He will probably go in for several sizes of ordinary files, and several of rasps for filing wood. He will buy small clamps to hold his assemblies together after he has glued them, and in general begin to assemble a good set of tools.

If you ever see the bench of a real amateur mechanic, you will notice that he has upon it several glass jars or cans, and in these he keeps an assortment of nails and

screws, so that he always has them on hand. You will also notice that he has a jar or can full of odds and ends, such as screw-eyes and screw-hooks, bolts of numerous size, washers and nuts. He has learned that sooner or later something will crop up that calls for their use; so he discards nothing that appears to be of some value.

Modern development has naturally led to the manufacture of many different kinds of electrically operated or power tools. When you have a large amount of work to accomplish, which is all alike, they no doubt save a lot of time and labor; but for the usual run of household repair work, the old hand tools are still efficient and actually more fun to use.

Chapter 15

LANDSCAPING AND OUTDOOR WORK

THE AVERAGE HOMEOWNER makes one great mistake when it comes to laying out his grounds in that he becomes over-enthusiastic, and goes in for flower-beds and planting which, after a year or two of growth, demand too much of his time to keep in order. It is one thing to lay out a flower-bed with a scalloped edge, and to turn over the earth and think how fine it will look when the flowers come up, but it is a different matter when you have to spend an hour and a half edging the bed and weeding around the stalks. Of course if you have a large place, and can afford a gardener, you have nothing to worry about, and you may indulge your tastes to your heart's content; but if you take care of your own grounds, simplicity and easy of upkeep should be your aim.

Most houses which are built on a modest lot of ground will do very nicely with a clean-cut lawn, well-edged road and paths, and a few well-placed shrubs. You will find that even the simplest layout will take plenty of your time.

When it comes to cutting a lawn properly, the only necessary tool is a good lawn-mower. Lawn-mowers, as a

rule, are self-sharpening, but if the blades should be nicked or dulled, they can be brought back to a good edge by using a fine file. The mower should be set up on a table or bench and blocked, so that it will not roll off. The blades can then be turned backwards freely, and you can sharpen each blade separately with ease. At the bottom of all lawn-mowers there is a stationary blade which is adjustable. By backing-off or setting-up small set screws at each end of this blade you can bring it closer or further away from the revolving blades. A properly adjusted mower is one where the revolving blades just "kiss" the stationary blade, and they should be sharp enough to neatly cut a piece of newspaper.

People make a great mistake in hanging a canvas bag on the back of a lawn-mower so as to catch the cut ends of the grass. These should be allowed to fall as they may on the lawn, because they will dry up, fall between the live blades of grass and make the most marvelous fertilizer for new growth.

When a lawn-mower needs oiling, the best thing to do with it is to remove the wheels by loosening the nut or screw in the center of each and swab the gears with ordinary vaseline. This will not dry out as oil will, and it also prevents any rusting of the gears if the machine is left out in the rain.

To edge a lawn properly requires only one tool, which is known as a "turf-edger" or cutter. This is a crescent-shaped steel blade on a long handle; and if you lay down a line and stretch it tight along the edge you want to

cut, and you have a sharp edge on the tool, you can slice through the turf in a straight line as easily as you can cut through a loaf of bread. Turf-edgers can be sharpened by taking a fine file and filing down the blade on both sides so as to bring it to a keen edge.



Edging will be neat and clean if tools are sharp and a line stretched tightly above the line of cut.

No one should attempt to edge without first driving two stakes and stretching a length of heavy white cord between them. A ball of mason's twine can be bought

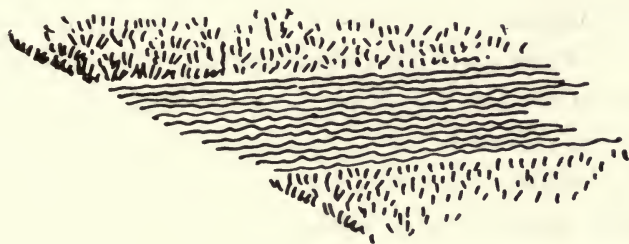
for twenty-five cents and will last you for five or ten years.

As far as planting goes, the simpler the layout the easier will be the maintenance. As a general thing, a medium-sized shrub on both sides of the road into the place is effective. The planting around the house, which is usually referred to as "foundation planting," should consist of a tall shrub at the corners and low, heavy, thick shrubs around the base of the building. No doubt you have seen houses which were overdone and where the shrubs were not properly selected, so that eventually they grew high, obscured the windows and rendered the interior of the house quite dark. Another point is that shrubs should be planted to allow for future spreading, and they should be kept so as to be at least a foot away from the walls of the house. When shrubbery is in contact with the wall, it keeps it damp, and paint will deteriorate and mortar joints will fail more rapidly than is the case when they are able to dry out.

It looks very attractive when the shrub border around the house is edged and weeded and the lawn not permitted to grow in the border; but it is a full day's job to edge, weed and rake smooth the bare sod. You will find that if you allow the lawn to grow right up to and under the shrubs, you will have a far shorter job in keeping the foundation planting looking well.

There is nothing at all the matter with clumps of shrubs on large lawns, but they should be treated in the same manner, as far as upkeep goes, as the foundation

shrubs—namely, keep down the amount of work that has to be expended upon them. As a rule, one more or less tall shrub in the center, surrounded by low, thick shrubs, makes the most effective planting.



Cross-raking rather than lengthwise raking produces a better-looking job.

You frequently see grounds around a house where circles have been cut around the bases of trees, and the lawn is kept from growing in the circles. As long as it is edged, weeded and raked smooth, it looks well, but it involves quite an amount of work, and, besides, any pro-

fessional tree expert will tell you that the trees will not flourish as well under this condition as they would if the lawn were permitted to grow right up to the trunks. One idea is artificial; the other is perfectly natural, and therefore better.

When you rake a road, it should never be raked from back to front, but should be raked from side to side. This also applies to paths. If you care to make the experiment, take twenty feet of your road and rake from front to back; stand away at the end of the road and look at the job. Now rake the road from side to side, starting at each curb and raking toward the center. Now stand off and look at this job, and you will hardly believe that it is the same road. The long raking shows every scratch and furrow; the cross-raking looks smooth and even.

While on the subject of smooth-looking jobs, you might try another experiment. Cut your lawn from front to back, in other words start near the road or street, and cut back in a straight line toward the house. Now go out on the road and look at it. You will see distinctly the lines made by the cutting. The next time you cut it, do the job at exact right-angles, in other words, cut across the lawn from side to side of your property. Go out on the road now and look at that job. You will see that the lawn looks about three times as smooth and even.

It is the small things such as these that the homeowner will learn. He will find out how to do things easily and to better effect, and before very long, he will work out a system which applies to his own property, so that he can

get out in the morning at eight o'clock, and call it a day by eleven o'clock; leaving behind him a neat, well-groomed place.

Among the tiresome jobs to be found outdoors, is that of weeding the roads and paths. During the summer you will find that road-weeds grow as though by magic. As a matter of fact, if anything else were to grow as easily and quickly, we would be quite delighted. Using a weed-scraper, to scuff along the road and decapitate the weeds, is more or less useless, because they will be up again in a week. The best way in which to handle them is to buy a can of good weed-killer, dilute it in water according to instructions, and spray the road with it. One application usually takes care of the weeds for a season. You must use caution however in doing this work, because we have had the experience where we were too generous with the killer, and it soaked the edge of the lawn and killed the grass for about a foot inside of the border. Keep your liquid at least a foot away from any lawn edge, and you will not be in any danger of burning the grass.

We have seen people spend hours at a time digging dandelions and crab-grass out of a lawn. Frankly we think that this is a waste of time, because when a lawn is cut once a week, it is bound to look well and to improve in thickness and body. The lawn-mower will take the heads off the dandelions, and the leafy part lies flat and is not unsightly.

When it comes to raking a lawn, we believe that a bamboo rake is the best implement because it does not tear

at the roots of the grass. If you rake and rake a lawn, and bear down heavily with the rake, you will gradually expose the roots, and the next thing you know you will see brown patches appearing everywhere. This means that you have brushed the soil away from the roots and they are drying up.

Most suburban and country places develop what is known as "road trouble." As a rule this shows up in the spring after the snow has melted and after the heavy rains have set in. There is nothing more annoying than a rutted road, or soft spots in which your car mires down.

A good road is laid by excavating to a depth of about one foot, laying in a foundation of heavy stones, rock or broken-up concrete, covering that with cinders a depth of six inches, and topping off the surface with two or three inches of bluestone, gravel or prepared road-dressing. Of course in the average house you will not get any such job. Usually the speculative builder will be content to cut in a shallow roadway and top it with gravel or crushed stone. As a result you have the road in bad shape before many months of use.

The best remedy, short of rebuilding the road, is to continue patiently to fill holes and depressions as fast as they appear. Use stones that are about one or two inches in size, and that are rough. Round stones are no good because they never "bed," but continue to move and work around. Sharp, rough stones dig in and stay in place.

When you are dressing up a road, always make sure that you have drainage. In other words, build up a crown

in the center so that water sheds off to the gutters and does not lay on the road and "jelly" it up into an emulsion.

The topping used as a finish for the road should be selected with more care than you may imagine, because of the dusting which some types give off. Ashes will dust badly in dry weather and eventually work into your house. Bluestone will grind up and dust after a year or two, although it packs beautifully and makes a hard road. In our opinion gravel makes the best topping, because it will sink into the base of the road for a certain distance and then stabilize. The surface can always be raked and smoothed with ease. Gravel will not stick to the soles of your shoes and be carried into the house. Gravel will not crush under use, and will never dust. After each rain-storm it will be clean and white.



HOUSEHOLD CRAFTSMANSHIP

ANY MAN who has bought a few tools, is quite anxious to make something with them. He may have been successful in getting a door to close properly, or in making a balky window easy to operate. He is never satisfied with that sort of thing, however, and feels that his skill with the tools calls for a definite expression of his ability as a mechanic. Nine times out of ten he will attempt something which is a bit over his head, and as a result, throw the entire idea overboard and go back to collecting stamps or playing golf in his spare hours. If he would have the sense to confine his first efforts to a few simple jobs, and complete them with comparative ease, he would find that he could move along to bigger and better things with the natural development of his ability.

It has been proved that the first attempt of the amateur mechanic around a house is to put up a shelf. Somebody, sometime, decided that this was about the easiest thing to do; but they made quite a mistake. Although we think that we know most of the story about houses, we must confess that we have spent some bad hours trying to put shelves up; only to find that we could not locate the studs which would take a nail, cracked too much of the

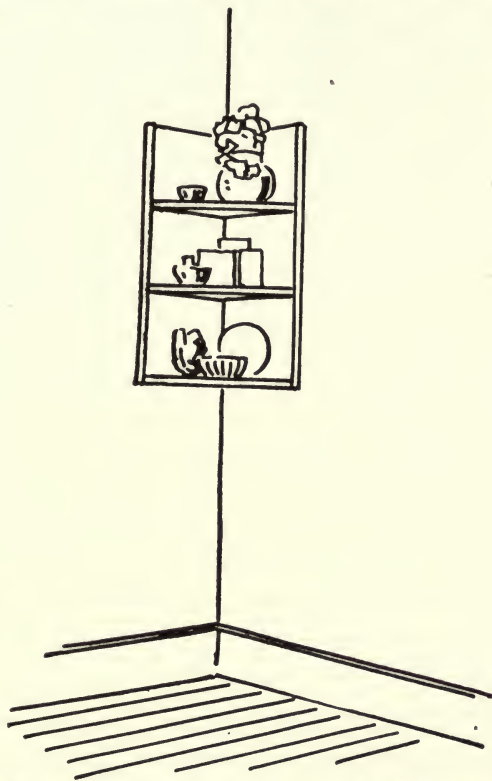
plaster wall-finish, or ended up with a shelf which turned out to be too narrow to accommodate the stuff which was to be placed upon them. We must also confess that we totally forgot the most important of all matters pertaining to shelves, and that is the height. Nevertheless after one or two lessons, we came to the understanding that putting up a shelf was not a matter of sawing a board to a certain length, and putting up two brackets; but it was rather a three-dimensional problem, involving three questions, how wide should the shelf be, how high should it be, and how was it to be fastened to the wall. From there on, we made no mistakes about shelves; and you need make none yourself. As a matter of fact, every time you attempt a job around the house, you will escape a lot of grief if you will just take five minutes off, and really think about what you are about to do. As a specific example, consider for a moment the fact that doors can swing two ways. You may have a room so furnished or so laid out, that when the door opens into the room it bangs against the corner of a dressing table or a bed. If it swung the other way, it might open against a blank wall, and be a correctly placed unit of the house assembly. You might also consider the matter of properly located electric-light switches. In one instance you may find that the switch is located immediately inside the doorway and at waist-high level where it belongs; where it is a natural thing to find it; and on the other hand it may be halfway across the room where you have to grope in the dark to find it. The problem involved in the shelf, door, or switch matter is identical. All that

you need is attention to the result and the accommodation to be achieved. You can get both by studying the matter. Never attempt to do anything until you think it over. If you had ever been in the building business, or had ever been connected in any way with carpenters, masons, plumbers, steamfitters, plasterers, or other capable mechanics, you would have noticed that they never rush at a job. To you they may appear to be wasting a lot of time; but they are not. While they are scratching their chins or chewing their tobacco, they are also thinking a bit, and figuring out the best way to tackle the job. The twenty minutes to half-hour which they spent on that, is more than compensated for by the speed with which they will clean up the job. No first-rate mechanic or tradesman ever laid saw to wood or chisel to stone, until he knew what it was all about, and how he was going to do it.

In one of the previous chapters devoted to built-in furniture, we went into considerable detail about the building of built-in beds and bunks, dressing tables and settees. None of it was too involved, and the average man should be able to work them out; but there are other and more simple things which are handy to have around, which he may also make and with less difficulty. We will explain a few of them.

Every room, hall, and section of a house has corners. We all know that the average corner goes to waste. This leads up to the matter of corner shelves or cabinets. A corner-shelf is composed of a triangular piece of wood which fits along both adjoining walls and presents a front

edge touching both walls. There are two ways of making a corner-shelf. One consists of attaching two strips of wood to the walls and cutting one or more shelves to fit across them. The other consists of fastening two pieces

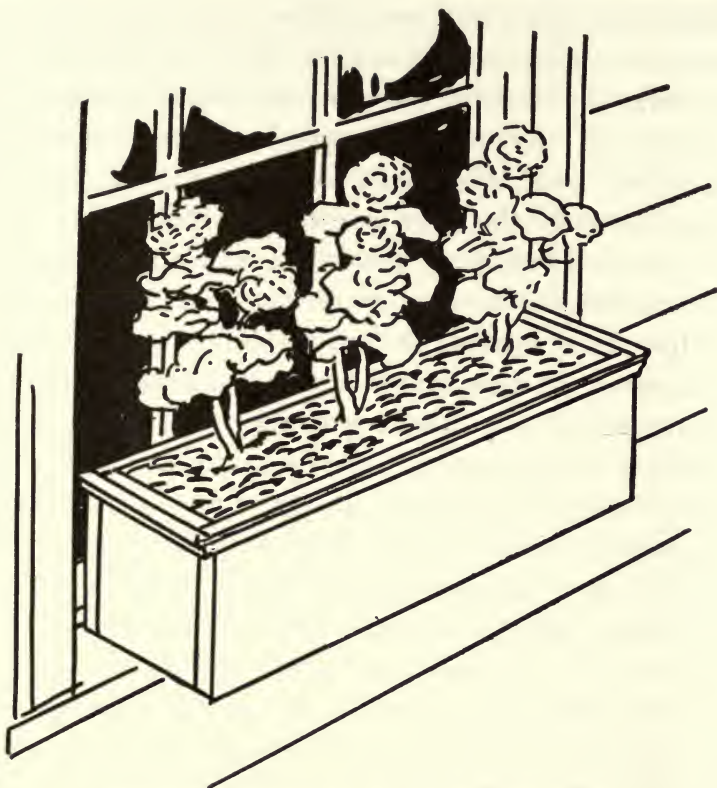


Corner shelves and straight shelves do not involve difficult measurements or require skilled workmanship.

of wood to the wall which furnish "sides," and then cutting and fitting shelves to be nailed between the sides. Either job is completely elementary. If you want a set of corner shelves, the bottom shelf to hold a telephone, and

the upper shelves to hold ornaments of one kind or other, you first determine the number of shelves you want (allowing the proper space between them) and then proceed to cut two pieces of shelving (finished and sanded board) the proper length. You nail these to the wall at whatever height you have decided upon. You only drive the nails in halfway. Satisfied that height and depth are correct, you draw out the nails, and overlap the boards to that the edge of one lies on the surface of the other like the corner of a box. You nail through one into the other, and then are ready to reset them on the wall and fasten them, but before doing this, you cut the determined number of shelves and nail through the sides into the edge of the shelves, thus making a complete assembly ready to erect on the wall.

Window boxes will probably cost you three or four dollars apiece. If you take a length of one-inch by eight-inch (approx.) finishing strip and cut three lengths three feet long, and nail them into a bottom and two sides, and then cut two short lengths which will slip between the sides, and nail them together and paint them, you will have a perfectly fine flower-box for about twenty cents. If you are sure to assemble the box by placing the bottom on a table or bench, and setting the sides down alongside of it, instead of on top of it, you will find that the job falls into place like a jig-saw puzzle, only easier. Providing that you want a very "finished-looking" job, you can buy a few feet of molding, and using your miter-box, cut and nail on a finishing bead around the top. If



Building a window-box is a very simple square-cut job.

you attempt this job, we advise that you make one window box first; do not go in for mass-production stuff. If it works out nicely, very good; if it does not, knock it apart and start over again.

We are all familiar with the appearance, design, and general make-up of lawn or porch furniture which comes knocked down and ready for assembly. In these days of high costs an average chair may be worth eight or nine

dollars. Actually, they are made of wood strip approximately three inches wide and $\frac{7}{8}$ " thick. A few years ago we bought one chair of this type, but instead of assembling it, we went to the lumber yard, bought several lengths of finished wood strip about the same size, and cut three lengths exactly the same as each individual unit of the chair we had bought. We ended up with three additional chairs which cost us about sixty cents each, not including the painting or the half-dollar's worth of nails. It was honestly about the most simple job we had ever undertaken, and consumed one Saturday afternoon. If you attempt anything of this sort, you want to remember that furniture is made to bear weight, and there must be a supporting member under the seat slats. It will not do to nail through the side pieces into the seat slats; they must have a bearing. Follow the pattern laid out for you, and do not try to be a furniture designer yourself.

In almost every house in the country, you will find odds and ends of furniture that have been shoved into the discard because they have been broken, outmoded or have outlived their usefulness. In practically every instance, there is plenty of life, usefulness, and an astounding amount of up-to-date possibilities in these old things.

About a year ago we visited a friend who lived nearby, and on his porch we saw one of the best-looking coffee-tables (or cock-tail tables) we have ever laid eye upon. The story was quite simple. He had an old lap-board which had been used by his mother for cutting out dress-patterns. It was made of strips of mahogany and

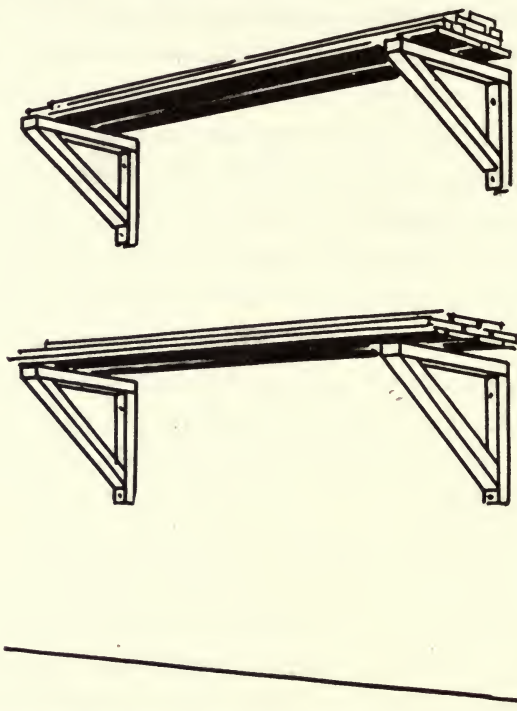
oak about an inch thick. He took the old legs off the contrivance, made a plain wood frame with four square legs, and laid the old lap-board on top of this; sanded and enameled the frame and legs white, varnished the top, and put two large cast-brass handles at the ends. The net result, a table worth fifty dollars if it is worth a cent.

Old radio-cabinets, old victrola cabinets and aged pieces of furniture can be worked over, altered, cleaned up, re-painted and re-designed to make some of the best-looking pieces imaginable. You can take an old bed with a high head; cut the head down to mattress height, and use the foot-piece as the head. You can paint it and make an up-to-date piece out of it. There is never any hurry about this kind of work. You can take your time, look around for ideas of what to do with old stuff, study it carefully, read up about it, and probably have a lot of fun in the bargain.

One of the best ideas we have seen in quite a while, is that of modernizing old doors. The usual door is made of several panels, the most modern doors are what we call "flush" doors. In other words they are perfectly smooth. You can take any old door, remove the handle and plate, and cover it with heavy linoleum of any color you wish, and then set a narrow molding around the edge, and replace the plate and handle. The result is excellent, and the door is brought up to modern style. The same method may be used in applying a thin sheet of plywood over an old paneled door.

Another excellent idea for the home-craftsman, and

an easy one to work out, is to make a shelf-frame to go above the head of a bed, and to come down on both sides. This frame can be fitted with a reading-light, and the shelves can hold all of the articles you usually want to get



All ends and short lengths of wood should be saved and stored neatly away on racks. You may have use for any piece some day.

your hand on, and hate to get up to do it. Your watch or alarm clock, carafe and glass for water, books or writing paper. All that you need is several lengths of shelving, your hammer and saw, and a good design to follow. In almost any magazine you will see a number of bedrooms

featuring this idea, and you can select the most appropriate, do a bit of square cutting, and have it.

The man who is interested in craftsmanship soon learns not to be wasteful of material, and to save all the odds and ends of board, molding, plywood and strip. He does not bother to straighten nails, but he does bother to save screws because they can usually be re-used. The real "household-putterer" has a rack on which he stores all small pieces which may be left over from a job, and nine times out of ten he will eventually find a use for them. When a broom is broken, he saws off the handle and keeps it, because he knows that if he ever has to put a new rung in a chair, that handle will make an ideal piece of stock out of which to make the rung.



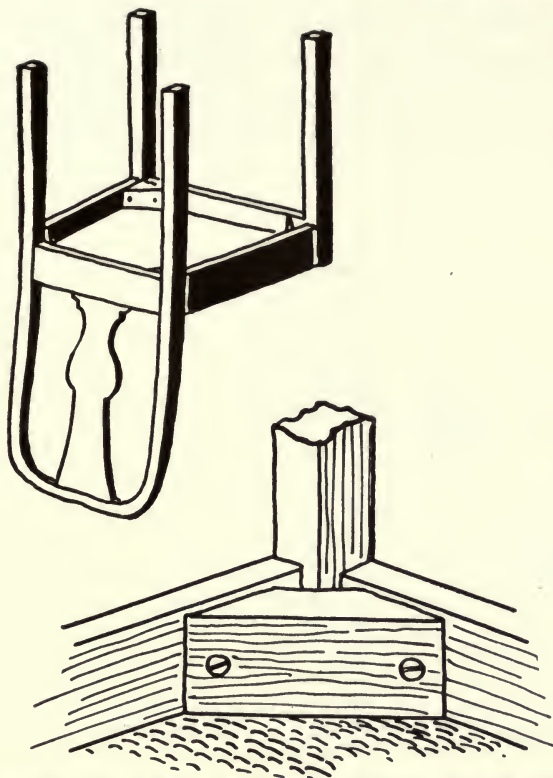
Chapter 17

FURNITURE REPAIRS

THE ATTICS AND BASEMENTS of homes are usually well furnished with a half-dozen or more broken chairs, tables, beds and bureaus. Most of these discarded odds and ends have been used until they broke down, and then have been stored out of sight and forgotten. The breaking-down started in every case with a small weakness which prompt attention would have remedied, and the piece might still be in use. Instead of that, the weakness or defect, which must have been perfectly obvious for some time, was neglected until it developed into a definite break.

When you see a broken-down chair, the chances are that either of two things is wrong with it. First, a leg is broken; and second the seat is out of it.

No matter how cheap or inferior furniture may be, it is usually put together in more or less of a standard manner. The legs of a chair usually form four corner-posts which go right up to the seat, and the frame beneath the seat is doweled, glued, nailed, or screwed through corner-blocks into the legs. If you take an average dining-room chair and turn it upside-down, and remove the cloth cover which hides the webbing and the springs, you will see the whole picture clearly.



Repairs to chairs are quite simple after you are familiar with the construction.

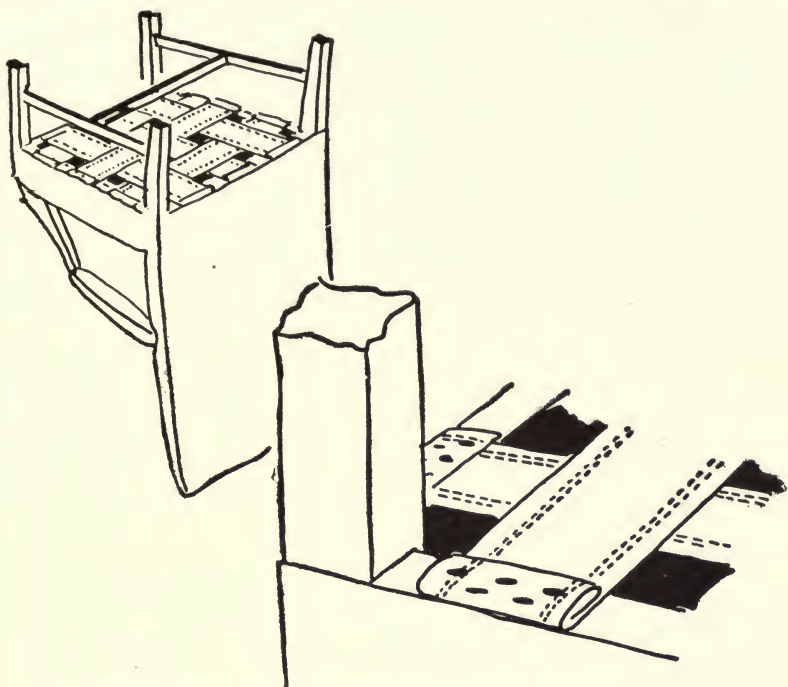
When the leg of a chair starts to loosen up or creak when the chair is in use, it is time to look it over. If you attend to it then, you will save the chair or save an upholsterer's bill. Usually you can up-end the chair, remove the bottom covering, and tighten up the screws in the corner-blocks which hold the legs and frame together. This is about a fifteen minute job, and you will be rather surprised at how firm the chair seems to be after you have done it.

If a chair leg is split, you should bore two or more small holes through the broken-off piece, apply good glue to both sides of the split, place the pieces together, and drive small thin brass screws through the holes and into



The average homeowner can manage most furniture repairs with ease if he studies the necessary work and uses common sense.

the other section of the leg. We advise the boring of the holes first, so as not to split the loose piece. The chair should not be used for a week, so as to give the glue a good chance to set up hard. There are a hundred ways in which a chair-leg might split, so you may have to do a bit of figuring to cover your particular problem; but the



Re-webbing is not difficult, because you need only follow the manner in which the original webbing has been done.

main rule is to put the screws through the smallest or thinnest piece and into the larger section.

Some very cheap chairs have corner-blocks which are simply nailed and glued into place, instead of being screwed to the frame. In this case you pry them out, scrape off all old glue, apply fresh glue, and re-nail them in place; taking care not to use the same nail-holes but being sure to use the same size nails.

Re-webbing a chair is an easy job while only one or

two of the webs is broken or pulled out of the frame. You simply up-end the chair, seat-down on a table or bench, and remove the web covering. Sometimes, just the tacks which hold the webbing have pulled out, and you can re-tack the web. If the web is broken or faryed, you have to buy new material and tack a new web in place. You should study the manner in which the old webbing has been tacked to the frame, and do your job in exactly the same manner.

When all the webs are broken or in generally bad condition, you must do a complete job. For this operation you will need some help, as some one has to bear down and compress the springs, while you stretch and tack the new webs in place.

At times you will find a chair that has been re-webbed so often that the bottom edge of the frame is pitted with holes and it is hard to find any place in which to drive a new tack. Some excellent jobs have been done in conditions such as this, by cutting out a square of quarter-inch thick plywood exactly the size of the bottom of the seat, and screwing it to the bottom of the frame instead of using webbing. This job is good for a lifetime, if you do it properly by using long, thin screws, boring holes for them first so as not to split the frame, and soaping the screws so that they drive in easily.

Recovering dining-room chairs is a job that requires hardly any skill or imagination whatever, because when you remove the old covering you have a perfect pattern from which to cut your new material. The creases in the

old covering also show you exactly how it should be folded to fit in place before it is fastened to the frame. Most dining-room furniture has seat-covering which is studded with large-headed ornamental upholsterer's tacks. You should lift these out with care and save them, as you may have difficulty getting new ones of the same color or pattern, and you will not want one chair to be trimmed differently than the others.

There are many types of small chairs found in bedrooms. Often these have a rather heavily upholstered seat which begins to show wear and has to be recovered. We have seen many which were fitted with a new seat instead of trying to re-tie springs or fluff-up the wadding. This job is done by removing all of the old seat so that nothing remains except the frame. A plywood seat is cut that will just cover the frame to the edges. Over this is laid several thicknesses of old blanket material or wadding, until the desired amount of padding is reached. The new covering is then laid over the padding, and turned over and under the edge of the plywood and tacked lightly with very small tacks. The new seat is then placed on the frame and fastened by driving fine wire nails through the edge and into the frame, sinking the heads through the outside covering.

The average bed receives pretty rough treatment. Every time you take hold of the head or foot of a bed and drag it this way or that way, you warp it badly. A bed of the usual kind is simply a box-like frame supported on four legs. It is quite light, and does not have any cross-

bracing worth mentioning. The slats are merely to hold the box-spring and mattress. Of course the right way to move a bed is to take hold of the foot, and pull it toward you or push it from you; or to stand at either side and move it squarely away from you; but nobody does that, they grab it by one corner and drag it obliquely, wrenching every joint. Before long, they have a well-loosened piece of furniture.

The best thing to do with a bed that shows signs of loosening up, is to cut two pieces of shelving, ten inches wide and long enough to be a tight fit between the sides, and place them on the strips which hold the bed-slats, and put two screws through each end into the strip. Set one at the head and one at the foot. These will act as braces, and if you cut them truly square so that each end fits snug against the sides, you will have a strong assembly.

When it comes to polishing furniture, we believe that good furniture-oil makes the best job. When wax is used continuously it may build up a skin which may turn slightly grey, while oil brings out the grain in wood and is actually a food for it. When varnished furniture is involved, we believe that oil is better for the finish than heavy waxing. Naturally the oil should be used sparingly, and elbow-grease substituted for generosity.

Painted furniture, which we see more and more of every day, does not have to be polished as a rule, but it does have to be cleaned occasionally. The best method is warm water, a good mild soap, and a soft sponge. First apply the soapy sponge, rinse it out, and wipe the wood

with clear water and rub dry immediately. Never permit the surface to be wet long, because furniture paint is not the kind used on the outside of the house. Do not rub too hard when drying, as that will gradually change the color of the paint.

Glass tops on furniture save it tremendously, and the few dollars that it may cost you to buy them is well spent. There are two ways of putting on glass tops. You frequently see small round felt discs at the corners and in the center of a table-top under the glass. We think that these should be omitted, because they hold the glass away from the surface just enough to permit plenty of dust to get underneath, and thus require the removal of the glass frequently in order to clean under it. The less you have to handle glass tops, the better. The surface of the table or dresser should receive a good, high polish, and the glass should be slid into place right on top of it. You may not have to remove it for a year. The other way, you may have a weekly job.

A lot of the furniture we have is known as "veneered furniture." This means that the bulk of the piece is made of white-wood or other inexpensive wood, and the surface is covered with a paper-thin thickness of a precious wood such as mahogany. This thin veneer is glued or cemented on, and with time it may split and start to peel off. It is absolutely fatal to allow this to go without attention, as once the splitting starts it will go fast. You can remedy this trouble in a few minutes. Take a toothpick and run glue into the split, getting it under both

sides of the crack as well as you possibly can. Then press the split flat so as to squeeze out the excess glue, and wipe it off. Now pass a piece of clothes-line or rope around the piece of furniture, using cloths at the corners so as not to mar it, and make a tourniquet over a flat block of wood covering the split. Turn this up good and tight, and let it alone for about a week. If there is any glue, dried on the surface around the split, it will come off with warm water.

Much of the trouble with bureaus, chests of drawers, desks and draw-tables, is caused by the fact that the drawers stick, and you have to tug so hard to open them, that eventually you strain every joint in the piece. It is child's play to take the drawer out, and sand down the bottom or sides where it rubs against the runners. In any hardware store you can buy a stick of paraffin-like compound, which you rub on the bottom edges of the drawer and on the top of the runners. This may do the trick even without the sanding off process; and you will save the furniture, and incidentally your temper.

When the handles or knobs on old furniture are broken or missing, the piece promptly takes on an air of dilapidation. Usually it is hard to match such items, so the best thing to do is buy a complete new set. If a knob is involved, you will have no trouble whatever, but if it is a handle with two posts, you must be sure that the new set has posts which will fit into the two holes left when you take the old handles off.

The stitch-in-time proverb applies to all household

furniture; better probably, than it applies to anything else around the home. Most of us have spent a considerable sum of money on it. If you want it to last as it should, you have to watch it. Take care of defects as soon as you are aware of them, and the furniture itself will do the rest.

SEEING IS BELIEVING

THE HOME-BUILDING, home-maintenance and home-modernizing fields have been so thoroughly publicized and worked over, that the average individual is frequently at a loss to know what to believe or what to think about any of those particular subjects.

The publishers of this book are well aware of the amateur's point of view; and have gone to the trouble and expense of assembling and presenting to the reader, a series of actual photographs or reproductions which show exactly how apparently miraculous changes have been made in existing homes, and how real mechanics and tradesmen go about the work in which they are engaged.

The old Chinese proverb to the effect that "One seeing is worth a thousand tellings" may well be applied to the following series of illustrations; as they show just how a modernizing program is carried out, just how a professional roofer looks and acts when he is repairing or laying a roof, and exactly what the difference between tongue-and-groove sheathing and structural board sheathing consists of. The numerous reproductions of actual photographs shown in this chapter are presented for the sole

purpose of pointing up the text or copy so that he who reads may also see.

Starting with the first chapter of this book, the following illustrations will refer to each chapter in proper order as closely as the available material permits, and it is hoped that the reader may first read and then see the points referred to.

Taking care of your home involves a great deal more than the mere painting of a badly-weathered exterior wall or the clearing out of a stopped-up sink. If you are actually taking care of your home and protecting your investment in it, you must keep up to date with your interior arrangement and equipment. People are spending many thousands of dollars for authentic Cape Cod exteriors, but they want modern, comfortable interiors. The fact that the living room has a hand-hewn beamed ceiling does not mean that the owner will be satisfied with whale-oil lamps for his lighting. When you embark upon the project of keeping your home in repair, you should match it with a modernizing program which will keep your home marketable at any time. Your efforts will be well paid for by an increased value of your house.

The average small- or medium-size house has certain types of material covering the exterior. It may be wood in various shapes; shingles, clapboard or flush-siding. It may be solid brick or brick-veneer; cement-block, cinder-block, stucco or cut-stone. It may have walls of asbestos shingle, composition shingle or composition board. Be what it may, the material will have merit, either great

or small. The homeowners job is to find out all that he can about the material which covers his walls, and then to find out how to treat it and promote the greatest amount of service out of it. When he knows all about the exterior, he should find out all that he can about his interior walls and his floors. Done with that, he should find out all that is possible to find about his heating plant, his plumbing, and everything else that has gone into the make-up of his house. There are no strange and unknown materials in general use today, and once the owner knows what he has to deal with, it will not take too long to learn how and when to treat it for the ailments to which it is subject.



A lakeside house of certain vintage has been cleverly converted into a solid, modern and beautiful residence. The changes were not too great, but the convenience and actual value of the structure are tremendous. (See Chapter I.)





The room above and the room below, are one and the same. In the first picture you see an old fashioned comfortable living room, but in the second picture you see a thoroughly smart and bright living room which is just as comfortable. (See Chapter I.)





The average owner may throw up his hands in despair at the kitchen shown above; but actually, without any great structural change, or relocating of a single door or window, the kitchen was modernized to excellent effect. (See Chapter I.)





The professional roofer or exterior finisher, makes sure of his safety before attempting either repair or new work. Experience has taught him that he works faster and better if he is sure of his footing.
(See Chapter II.)





Beneath the exterior finish of the average house, there is a skin of material which backs up the outer wall. Wood sheathing has been a standard for many years. It is applied diagonally. Insulating board and plywood sheets have demonstrated their practical value in the small house building field. (See Chapter III.)





Wood or asbestos shingles are one of the favorite exterior finishes in use today. The ease with which one or more shingles can be replaced is obvious. (See Chapter III.)



Solid brick or brick-veneered walls are another of the most popular small house exterior finishes. A workman-like job such as illustrated is sure to give satisfaction. (See Chapter III.)



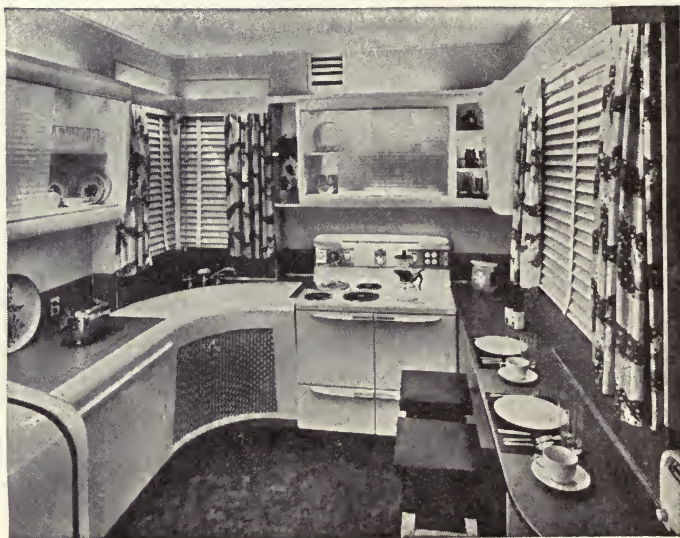
The picture above illustrates a very modern bathroom. The owner has made good use of the splendid possibilities of a glass block wall, but still provides ample ventilation through the two small high windows in the wall. (See Chapter IV.)



The three standard essential fixtures, found in the average bathroom, are shown here grouped in one corner of the room. This leaves the floor area well cleared and gives the impression of space far beyond the actual area. (See Chapter IV.)

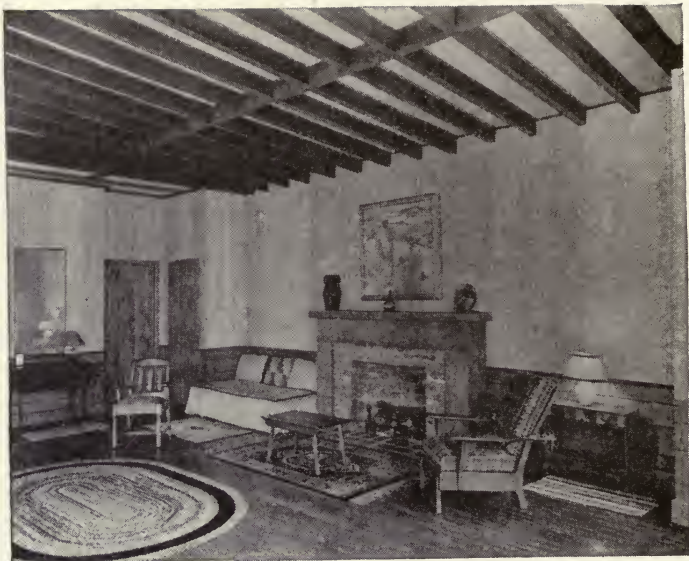


The plumbing involved for either of the kitchens shown here is about the same. One of the rooms is a strictly business-like kitchen; the other is an efficient layout, where a meal can be taken in comfort and with few steps. (See Chapter IV.)





Repairs to the electrical system are largely confined to the replacement of bulbs or tubes in the average well-wired house. The well-lighted room shown here benefits by no less than three arrangements. General overhead light, portable floor-lamp and decorative panel lighting. All easy to maintain in good operation. (See Chapter VI.)

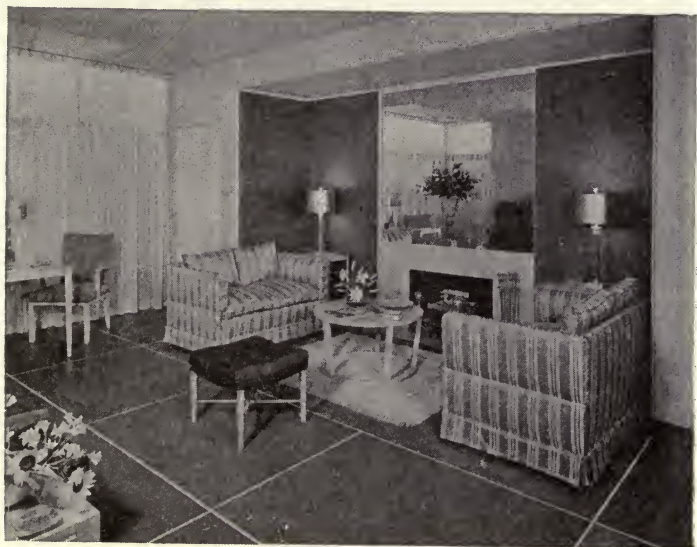


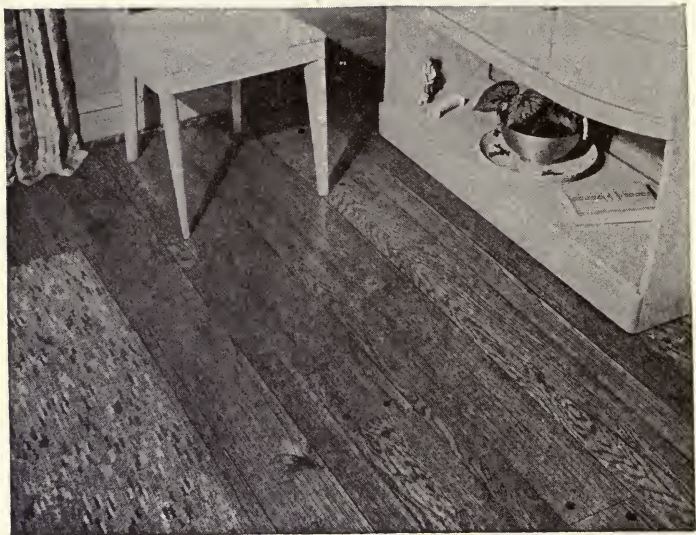
Composition wall-board is practical and proper as a finish in certain types of homes. It will take any amount of painting and has much insulating value. Plywoods are coming into great use as an interior finish. They are adapted for use in ultra-modern homes of the type shown below. (See Chapter VII.)



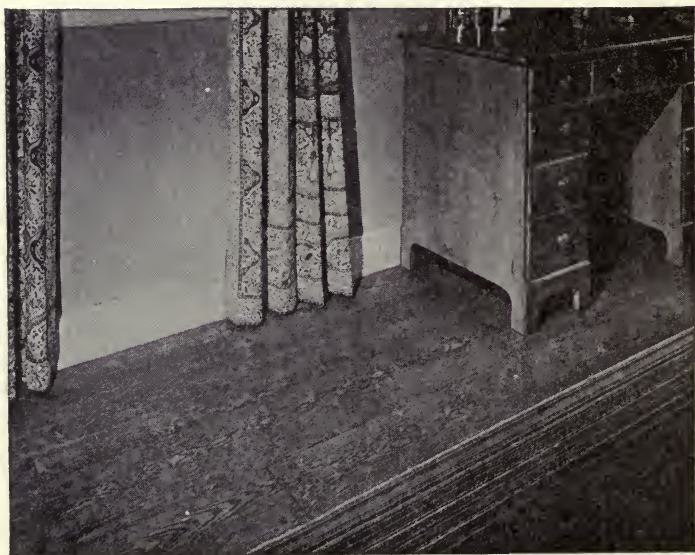


The subject of painting is one of the most important of all household maintenance items. The first illustration shows a sun-porch, done in one color; ceiling, walls and matching furniture. The second shows a room done in contrasting colors with blending furniture coverings. (See Chapter VIII.)



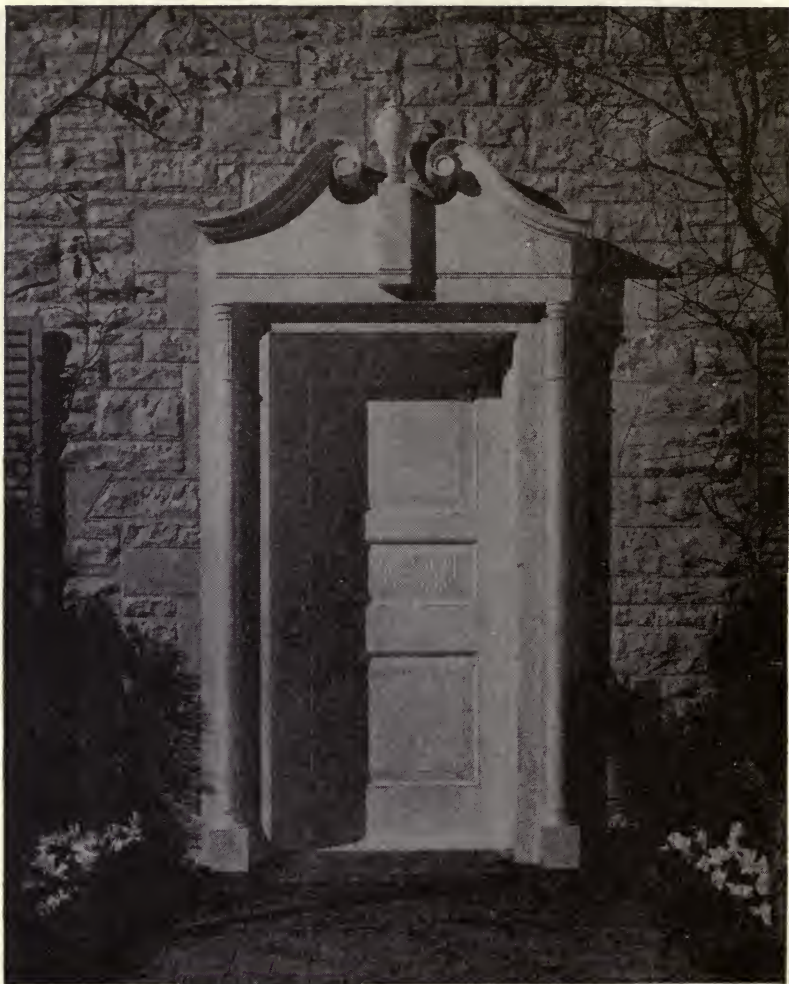


Above and below are two fine examples of good solid wood floors, which will endure for years, and require but a minimum of maintenance from the homeowner. (See Chapter VIII.)





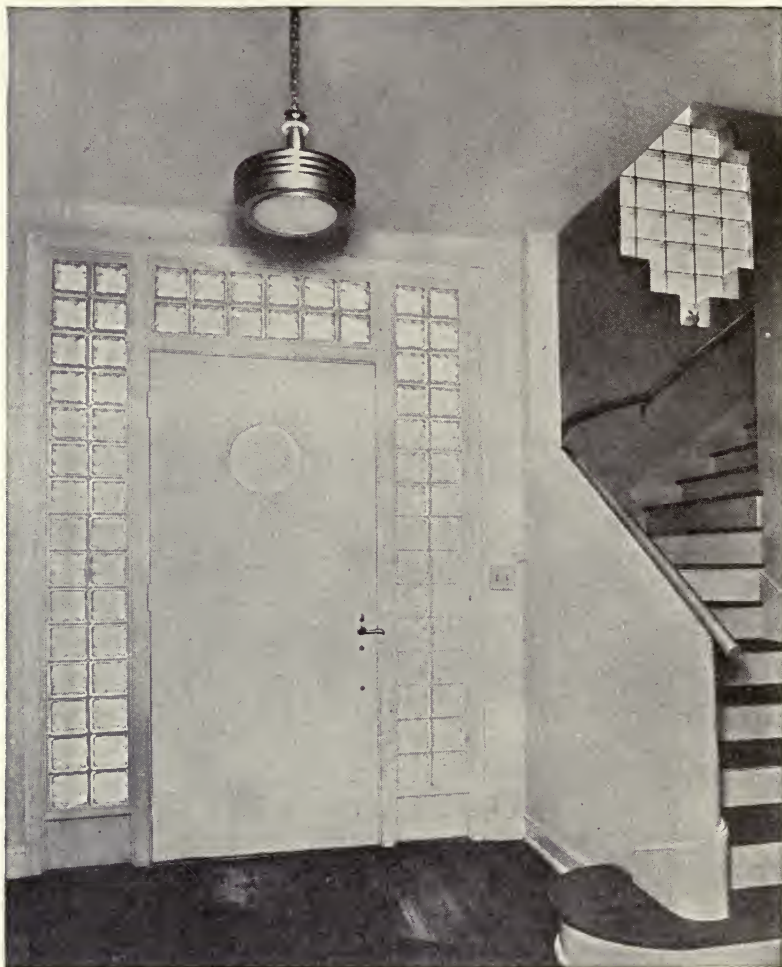
The treatment of floors depends entirely upon the worth of the floors. Certainly nobody would care to hide beneath a rug or carpets, the splendid inlaid hard-wood floor shown above. (See Chapter VIII.)



Masonry strikes the amateur with far greater force than it does the professional builder. At the same time, the person who knows nothing about masonry, is quick to detect the difference between good and bad masonry work. The job above is a masterpiece of the stone-masons art. Fine joining and fitting will make repairs unnecessary for many years. (See Chapter IX.)



*A stair landing can be a dangerous spot in any home, but it loses the hazard and acquires quite a bit of interest when it is lighted by a glass-block panel.
(See Chapter XII.)*



Entrance halls and foyers are difficult areas at best, but when they are treated as shown here, they become features of the house and add much to the general air of good taste. (See Chapter XII.)



Few people are aware that a thoroughly insulated house is a house which it is almost impossible to burn down. Insulation offers protection against the loss of heating energy, the admission of excessive heat in summer and the progress of fire. When attics, walls, and floors are insulated, combustion has a hard job making headway.
(See Chapter XII.)





A built-in corner settee shown above is typical of the built-in idea. It serves as a back-ground for dining at a small table, and can double as a seat when the table is removed. Built-ins are always in place, are easy to build and economical to maintain. (See Chapter XIII.)

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RK

R

DOOR
• PAINT
• PLANE •
DIATORS • RIP-
• HOUSEHOLD •
• SNIPS • SEWERS •
• SMOKE-PIPE • STAIRWAYS, REPAIR OF • STEAM
• PLANTS • STOPPAGES • STORM SASH • SCREENS
• TABLES • TOOLS • TRAPS • VALLEYS • VENTS • VENT
VALVES • WALLS • WASHERS • WATER SUPPLY • WEBBING,
CHAIRS • WINDOWS • WINDOW BOXES • WRENCHES.